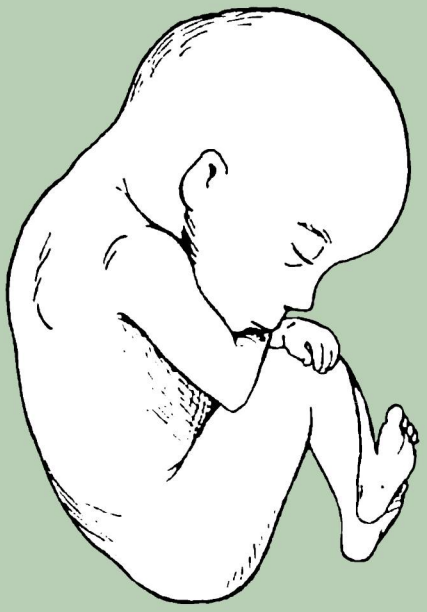
A. KAPLAN

OBSTETRICS and GYNECOLOGY



FOREIGN LANGUAGES PUBLISHING HOUSE
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A TEXTBOOK FOR NURSES

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Moscow

TRANSLATED FROM THE RUSSIAN BY DAVID A. MYSHNE

А. Л. КАПЛАН

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CHAPTER I

OBSTETRIC SERVICES IN THE U.S.S.R.

In general the term gynecology (Greek: gynaikos—woman, logos—discourse) means the science dealing with woman. In its narrow sense, gynecology is the branch of medicine which deals with the physiology and pathology of the nonpregnant female organism, the physiology and pathology of the female genitalia, and the methods of prevention and rational treatment of female diseases. Obstetrics, on the other hand, deals with the peculiarities and changes in the female organism connected with pregnancy, development of the fetus, labour and puerperium, as well as methods of preventing complications and administering rational aid during pregnancy, labour and puerperium to the mother and the newborn.

The striving to help the woman in labour and to bring her relief during these difficult moments is quite natural, hence, rudiments of obstetrics can be traced back to antiquity. In the beginning obstetric aid was rendered by women who had themselves given birth to children; subsequently some of these women made this aid their occupation, thus giving rise to midwifery. For many centuries parturient women were aided by ignorant midwives whose practice was based mainly on prejudices and superstitions. The midwives gave the parturient women steam baths, hung them up by the legs, kneaded their abdomens, "corrected" the babies' heads, tightly swaddled the babies "so that they may not have crooked legs." and did a number of other harmful things.

Before the second half of the 18th century obstetrics did not exist in Russia as a branch of medicine at all.

N. M. Maximovich-Ambodik

Childbirth was attended with very high mother and infant mortality and women were frequently invalided for life.

In the middle of the 18th century Russian scientists (M. Lomonosov et al) began to propagate the necessity of providing the population with medical aid, obstetric aid in particular. As a result, the first schools of midwifery were opened in Moscow and Petersburg and later in a number of other large cities. These schools strove to "provide the capitals and, especially, the regional centres with experienced, skilful and educated midwives". This movement was headed by N. M. Maximovich-Ambodik, prominent Russian scientist, who is rightly considered the father of Russian obstetrics. His extensive experience enabled him to compile the first original Russian textbook of obstetrics. Subsequently prominent specialists in obstetrics and gynecology appeared in Russia; these included A. Krassovsky, V. Snegiryov, V. Gruzdev, K. Skrobansky et al.

Despite this, obstetrics constituted one of the most backward branches of the public health services in tsarist Russia. Even the cities did not have enough childbirth beds or midwives, let alone the countryside where there were hardly any competent midwives at all.

The tsarist government was not in any way concerned with the question of organising obstetric aid; it took no interest in the health of the working and peasant women.

The very few maternity homes which existed only in cities and which besides required payment were unable to provide obstetric aid to all the women who were in need of it.

The working class began to demand protection for motherhood ever more insistently. The workers of the Nevsky

Shipbuilding Yards and of the Putilov and Obukhov works in Petersburg demanded establishment of maternity homes as far back as 1905. These demands were subsequently often repeated. The tsarist government but slightly increased the number of beds in the maternity homes at industrial centres, whereas the countryside was completely devoid of scientific obstetric aid and parturient women were at the mercy of ignorant midwives and quacks.

In 1913 scientific obstetric aid was administered to less than 50 per cent of the parturient women even in Moscow, whereas in other cities this percentage was much lower. It should be noted that the obstetric aid was also extremely unskilled. In the countryside it was administered to very few women by almost illiterate midwives trained at local hospitals and was still mainly in the hands of ignorant midwives who served close to 98 per cent of all the parturient women. In lying-in hospitals only women with severe pathological labour were given obstetric aid, and not all of them at that.

All of the foregoing was responsible for the very high mortinatality and mother and child mortality in tsarist Russia.

Mother and child protection was organised in the country from the very first days of the Great October Socialist Revolution, obstetric aid becoming one of the leading public health services.

All the measures of mother and child protection were aimed primarily at freeing the women from their prerevolutionary distressing semislave position in the family, at giving them a chance to participate in the construction of the socialist state and at enabling them to combine motherhood with socially useful work.

What the best representatives of the Russian intelligentsia, the public-spirited physicians, could only dream of became reality after the establishment of Soviet power. The most prominent public-minded physicians—obstetricians and pediatrician—who took part in organising the Soviet obstetric services included V. Lebedeva, G. Grauerman, A. Rakhmanov, G. Speransky et al. These great specialists were able to utilise their organisational talents and carry their ideas into effect only in Soviet time.

Obstetric aid increased and improved with each passing year. Many new maternity homes, entirely unlike those of tsarist Russia, have been and are still being annually built. The maternity homes are built according to the latest achievements of engineering, are excellently equipped and are staffed with qualified medical personnel.

A. Rakhmanov

V. Lebedeva

The number of maternity beds in the countryside has also considerably grown. A new form of organisation of obstetric service—collective-farm maternity homes and medical stations with maternity beds have come into existence. These maternity homes and medical stations have the necessary staffs of highly qualified obstetricians, gynecologists, midwives and nurses. In the course of a few years the number of maternity beds in the countryside has reached many thousands and continues to grow. The obstetric services have also developed.

In 1913 there were only 7,513 maternity beds throughout tsarist Russia, whereas in 1959 the Soviet Union had 204,783 maternity beds, i.e., more than 27 times their former number. Today all women can be fully provided with qualified obstetric aid in lying-in hospitals, both in town and country. In addition to the system of maternity in-

stitutions, an extensive network of maternity and infant health centres has been set up. In 1913 Russia had had only 9 maternity health centres which were actually very primitive institutions, while by 1959 the Soviet Union already had 15,624 maternity health centres.

A number of laws aimed at protecting the health of mothers and pregnant women have been enacted; for example, pregnant women may not be employed in night occupations from the very first weeks of pregnancy or given any overtime work from the fourth month of pregnancy; nursing women are prohibited from working at night, etc.

During the hard years of the Great Patriotic War the Soviet authorities continued to devote unremitting attention to mothers and children. Thus, in 1944 pregnant women and mothers were granted greater privileges.

After the war the government issued several ordinances and enactments aimed at enhancing mother and child protection and extending the network of therapeutic and prophylactic institutions for women and children.

The paid maternity leave for women workers and employees has been increased from 77 to 112 days (56 days before and 56 days after childbirth). In cases of pathological parturition and the birth of twins the postpartum leave is increased to 70 days.

Women are also allowed up to 3 months' additional maternity leave without pay.

All of the foregoing favours the birth of healthy children and enables the mothers to take particular care of them during the most important period, i.e., the first months of their lives.

In the U.S.S.R. mother and child protection has become a state law for the first time in history. The Soviet system of organisation of obstetric and gynecological aid has effectively reduced mother and child morbidity and mortality.

In the extensive network of obstetric and gynecological institutions the nurse, like the midwife, is doing very important work, for which reason she is required to be a highly qualified specialist.

CHAPTER II

INSTITUTIONS OF OBSTETRIC AND GYNECOLOGICAL AID AND FORMS OF THEIR ORGANISATION

MATERNITY HEALTH CENTRES

The maternity health centre is the central medical institution in the Soviet system of obstetric aid. The health centre carries out extensive prophylactic and therapeutic work among women in general, and pregnant women and puerperas in particular. The maternity health centre is simultaneously a cultural and educational institution, i.e., a school of maternity.

The health centre familiarises the woman with the fundamentals of personal hygiene, both at home and at work, and gives the pregnant woman special advice and aid.

After discharge from the maternity home the mother and child continue to be under the observation of the maternity health centre. The puerpera brings her child to the maternity and infant health centres where she is taught what to do for herself, as well as how to feed and generally take care of her child.

A community nurse, member of the maternity health centre staff, visits the pregnant women and puerperas at home, gives them advice, administers the necessary aid, and teaches them to take care of themselves and their children.

The maternity health centre gives the pregnant women and puerperas legal aid and administers gynecological aid to women and girls. Women are also given special instructions in the use of contraceptives.

Hence, the maternity health centre takes care of women not only during pregnancy, but actually all through life.

The **building** of the maternity health centre must be suited to the functions of this institution.

A well organised centre has the following rooms:

1) cloak-room;

Fig. 1. Health education talk in a maternity health centre. The nurse is talking to pregnant women using the exposition of the maternity health centre for purposes of illustration

2) registration office with special lockers for keeping the records of parturient women and puerperas, as well as the case histories of gynecological patients;

3) waiting-room—a well and cosily furnished room with posters and books on questions of feminine hygiene;

4) a room for lectures and talks on health education with pictures and other visual aids required for illustrating the lectures and talks (Fig. 1);

5) several specially-equipped rooms (with gynecological chair, couch, table for instruments, sink with running water or wash-stand) in which the obstetrician and gynecologist receive pregnant women and gynecological patients;

6) rooms in which pregnant women are examined by internists, venereologists, dentists and other specialists;

7) laboratory for analyses of the urine, blood and vaginal discharge;

8) procedure room in which patients are administered syringes, tamponades, enemas, etc.; a scale and a height measuring stand may also be placed in this room;

9) physiotherapy room equipped with modern devices and apparatus (quartz lamps, sun lamps, diathermy, etc.) with one or several adjacent rooms in which there are special couches for patients to rest on;

10) special gymnasium in which pregnant women may be given physical exercise;

11) clean, light and warm toilets near the waiting-room.

The foregoing list may be extended or curtailed according to particular conditions, possibilities and scope or work.

The maternity health centre in a collective farm maternity home, in which all the work is carried on by a midwife, is a single room with a small anteroom and toilet; the centre is completely isolated from the maternity home and has a separate entrance.

The maternity health centre should preferably be located in a maternity home or near it, or in the system of a general polyclinic.

THERAPEUTIC AND PROPHYLACTIC WORK

The work of a maternity health centre is conducted on a district principle.

The pregnant woman must be examined at the maternity health centre during the first weeks of pregnancy. Each pregnant woman is registered on a special card on the first page of which the nurse records all the information obtained from the pregnant woman during the primary registration.

The data furnished by a thorough obstetric examination of the woman during her first visit, as well as the data of the examinations by other specialists (internist, venereol-

ogist, dentist) and the results of the blood tests (including the Wassermann test), the urine and discharges are recorded by the physician on the pregnant woman's card.

During each repeated visit (not less than once a month during the first half of pregnancy, twice a month during the second half of pregnancy, and in some cases more often by special prescription of the physician) the physician records on the aforesaid card all additional data, including those concerning the duration of pregnancy and the changes in the pregnant woman's condition.

Repeated visits to the maternity health centre are very important even when pregnancy is normal. It is particularly important for the purpose of detecting deviations from normal pregnancy and receiving maternity leave in due time. The pregnant woman already on maternity leave must not fail to visit the maternity health centre. During the last two months of pregnancy the woman may have such a complication as pre-eclampsia which develops into eclampsia. Measures taken in due time (special diet, hospital regimen and treatment) may prevent this affection.

During the last month of pregnancy, especially the last two weeks, the course of labour can already be foreseen with a high degree of certainty and the position of the fetus can be ascertained.

During her last visit to the maternity health centre the pregnant woman receives an exchange (covering) card (p. 340) with which she enters the maternity home. This card contains data for the special attention of the maternity home physician, namely, contracted pelvis, incorrect position of the fetus, heart disease of the pregnant woman, elevated arterial pressure, presence of albumin in the urine, syphilis, gonorrhea, etc., and attended sessions in psychoprophylaxis of labour pains. All this is very important for the proper management of labour.

The exchange card also has a detachable reply part which is filled out in the maternity home. In this part the ward nurse fills in all the blanks concerning the history of the childbirth, lets the physician examine and sign it, and immediately sends it to the maternity health centre, thus establishing bilateral connections between the maternity home and the maternity health centre.

As was already mentioned, the maternity health centre administers all forms of polyclinical *treatment to gynecological patients*. The nurse must be able not only to help the physician but also independently to carry out all his prescriptions (tampons, vaginal baths, douching, dusting, therapeutic enemas, etc.).

SEPARATION OF WOMEN WITH PATHOLOGICAL PREGNANCY

Careful and detailed examinations of all the pregnant women during their visits to the maternity health centre reveal those with abnormal pregnancy. These women can be helped by timely hygienic and therapeutic aid.

It is important to discover the presence of pathology as soon as possible, which is actually the most important task of the maternity health centre. Such women are given special consideration and are observed both at the maternity health centre and by community nurses at home.

In cases of abnormal pregnancy attended with excessive vomiting, rapidly developing edemas, pre-eclampsia, hemorrhages and other complications the pregnant women must immediately be placed in a hospital, or a special department or ward for pathological pregnancy at a maternity home. Such hospitals are closely connected with the maternity health centres. It is desirable that these hospitals should also employ the personnel of the maternity health centres. This system ensures succession in the work, improves the work and makes it possible to set up continuous medical observation of the patient from the beginning to the end of pregnancy.

CONNECTIONS BETWEEN THE MATERNITY HEALTH CENTRES AND OTHER THERAPEUTIC AND PROPHYLACTIC INSTITUTIONS

To ensure all-round examination of pregnant women, the latter are also examined at the maternity health centres by specialists in other branches of medicine. However, this is not everywhere possible and is not always enough to administer the necessary aid to the women who apply to materni-

ty health centres. The latter are therefore closely connected with the district internists and pediatricians, as well as the nearest dispensaries—venereological, tuberculosis and neuropsychiatric. The maternity health centre refers the women to the appropriate specialists for examination.

PATRONAGE

Patronage of the pregnant woman, puerpera and gynecological patient pursues three aims—prophylaxis, treatment and health education.

Therapeutic patronage is effected mainly by a physician.

Nurse patronage applies mainly to pregnant women, puerperas and nursing mothers and is aimed at improving their sanitary living conditions. The nurse improves her protégés' health education by individual talks on questions of personal feminine hygiene. It should be remembered that health education consists not only of lectures and talks. These are, of course, necessary, but are not the only thing. The nurse must see to it that what she tells the woman and her husband should actually be carried into effect. It is necessary to educate hygienic habits in the family because this is the only way health education can really be carried into life.

In the pregnant woman's home it is necessary to create an atmosphere which satisfies as closely as possible the hygienic requirements of both the pregnant woman and her future child (cleanliness, frequent airing, separate beds for the expectant mother and child, the bed for the child being placed in the lightest corner of the room, an individual baby bath, water thermometer and locker for the child's linens). The pregnant woman must be explained in a friendly talk that curtaining the child's bed, using rocking cradles and fear of opening the windows, still observed here and there, are harmful prejudices.

The nurse teaches the woman proper care of herself and her child and tells her what she must prepare for herself and the newborn baby (15-20 diapers, 6 baby's vests, one metre of oilcloth, two blankets, 2-3 kerchiefs, etc.). During her patronage the nurse is in a position to observe the woman

from the very beginning of her pregnancy. She explains to the pregnant woman the importance of early application to the maternity health centre, detects in due time whatever pathology the woman may have and immediately reports it to the physician of the maternity health centre, thus preventing grave complications and helping the woman to go through pregnancy painlessly.

It is desirable that the patronage of the pregnant woman and subsequently of the puerpera and her child should be exercised by the same nurse since this achieves continuity of observation of the mother and child.

During her first visit to the pregnant woman the nurse fills out the special patronage card and during her subsequent visits records on it all that was done to eliminate the formerly noted shortcomings. The items dealing with special medical examination of the pregnant woman are filled in by the physician. After every visit to the pregnant woman the nurse informs the maternity health centre physician of her condition and the changes noted.

It follows that the nurse must have good knowledge of hygiene of pregnancy, the course of pregnancy and signs of deviation from the normal, feminine hygiene and care of the woman during the puerperium, as well as care of the child.

The extensive experience of maternity homes shows that wherever there is efficient patronage of the pregnant women and puerperas there are much fewer stillbirths and fewer children die during the first days or weeks of their lives.

The objectives of the maternity health centre and of the community nurse, in particular, also include teaching and helping the pregnant woman properly to utilise her maternity leave.

Not all pregnant women know how to utilise their maternity leave. Not infrequently a woman freed from work in industry overworks at home and is unable properly to organise her home chores. Not all pregnant women understand the great importance of rest for the safe consummation of their pregnancy and for the well-being of the future child. The maternity health centre and the community nurse must explain to the pregnant woman the consequences of improper utilisation of her maternity leave. During her visits to the preg-

nant woman the nurse checks on how her instructions are being carried out.

Organisation of special rest-homes and sanatoriums for pregnant women is an excellent measure favouring proper utilisation of their maternity leave. Such sanatorium- and semisanatorium-type institutions which employ obstetricians and nurses have every chance to ensure the pregnant women a proper regimen and rational diet, to conduct systematic work in health education and physical culture, to give them a psychoprophylactic preparation for childbirth and continuously to watch their condition. Such homes have now been organised all over the U.S.S.R.

Patronage of gynecological patients applies primarily to women in whom the physician has discovered during a prophylactic or usual examination affections which require immediate ascertainment of the diagnosis or treatment (uterine hemorrhage, erosion of the cervix uteri, tumours of the genitalia, etc.), but who failed to report to the maternity health centre at the appointed time.

CONNECTIONS BETWEEN THE MATERNITY HEALTH CENTRES AND INDUSTRY

Every urban maternity health centre conducts systematic work in health education at the nearest industrial enterprise which employs many women, whereas the maternity health centres of the collective farm maternity homes and the medical and obstetric stations on the state farms do the same work on the farms under their jurisdiction.

Sometimes maternity health centres carry on their therapeutic and prophylactic work directly at industrial enterprises where they arrange medical examinations by physicians and nurses. Such mass work is enormously important since the maternity health centres can thus quickly acquaint themselves with the working conditions of the women, teach them sanitary and hygienic habits, improve their working conditions, and, wherever the latter prove unfavourable for pregnant women, transfer these women to easier work in the same enterprise.

LABOUR PROTECTION OF EXPECTANT AND NURSING MOTHERS

Soviet labour laws provide optimum opportunities for the activ. participation of women in production and ensure healthful working conditions and labour protection for expectant and nursing motherse

In the Soviet Union women are prohibited from working in hard and harmful occupations and underground. The list of particularly harmful and laborious occupations to which women are not admitted has been approved by the Government of the U.S.S.R.

Fig. 2. Personal hygiene room at a factory; women workers thoroughly washing their hands (left); cabin for washing the external genitalia (right)

Pregnant women are prohibited from working at night; from the fourth month of pregnancy women are freed from overtime work at industrial enterprises and offices; from the fifth month of pregnancy women may not be sent on business trips away from their permanent residence without their consent.

Nursing mothers may not be employed in night work or overtime work as long as they are nursing.

Pregnant women transferred to easier work are paid their former wages (the average of the last 6 months of work). Pregnant working women and mothers who have children under one year of age may

transfer to jobs nearer to their residence and at the same time preserve their uninterrupted-length-of-service rights.

Women workers and employees are granted 112 days paid maternity leave (56 days before and 56 days after childbirth). In cases of abnormal childbirth, the birth of twins or premature birth the postpartum leave is increased to 70 days. All pregnant women are given this leave regardless of their length of service at the particular enterprise or office. Pregnant women must be given their regular leave which they may have timed to their maternity leave regardless of their length of service. The management of enterprises, organisations and institutions must grant women on their request after the end of their maternity leave additional unpaid leave of up to three months. Women who have left work in connection with childbirth retain their uninterrupted length of service if they go back to work not later than one year after childbirth, in which cases the period of unemployment is not included in their length of service.

Pregnant women and mothers of children under one year of age may be dismissed from work only in exceptional cases by sanction of their trade union.

Very important in the regimen of the pregnant working woman is her rest during the break for lunch. For this purpose the industrial enterprises employing large numbers of women set apart special rest-rooms and feminine hygiene rooms (Fig. 2).

Nursing working mothers must be granted half-hour nursing periods every three hours (for 9 months after childbirth).

Rest-rooms have special premises for nursing. These premises must be comfortably furnished and equipped with suitable posters on nursing hygiene; here the nurses observe and instruct the nursing mothers.

The personal hygiene rooms have special cabins with tiled walls and floors. Each cabin is equipped with a special sink with running warm water for feminine hygiene (Fig. 2).

In the cabin the woman washes her hands once again and, squatting, washes her private parts with soap and water without touching the sink. This procedure can be repeated every day. It is particularly important at enterprises where there is a lot of dust which may penetrate to the sexual organs.

PSYCHOPROPHYLACTIC PREPARATION OF PREGNANT WOMEN FOR CHILDBIRTH*

This new Soviet system of preparing pregnant women for childbirth has gained wide currency during the last decade both in the Soviet Union and abroad. Psychoprophylaxis of labour pains is a system of measures aimed at preventing the emergence and development of pains during childbirth through influences exerted on the higher parts of the central nervous system. Since 1951 this system has been widely used in obstetric practice throughout the U.S.S.R. The system and methods of psychoprophylaxis of labour pains have been worked out on the basis of I. Pavlov's physiological teaching. The preparturient preparation of women in the maternity health centre is aimed primarily at ridding them of the ungrounded but age-old fear of labour and of negative emotions, at acquainting them with the course of labour as a natural physiological act during which pains are not at all inevitable. The women are explained the essence of labour pangs, are told what to do during the different stages of labour and are taught pain-prevention techniques based on active behaviour during the pangs.

The psychoprophylactic preparation must essentially begin during the pregnant woman's first visit to the maternity health centre. The entire atmosphere of the maternity health centre, as well as of the maternity home, the work of the personnel and the considerate treatment of the pregnant woman literally from her very first steps in the maternity health centre must all be aimed at fostering a therapeutic and protective regimen. This alone may be sufficient to reassure the woman throughout her pregnancy and prove very effective with respect to the special sessions conducted at the end of pregnancy.

The special sessions in the maternity health centre begin from the 32 or 33 week of pregnancy in the form of individual and then group lessons (a total of 5-6 such sessions during the last 2 months of pregnancy).

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* For greater detail see I. Velvovsky, K. Platonov, V. Ploticher and E. Shugom's book *Painless Childbirth Through Psychoprophylaxis* published in English by the Foreign Languages Publishing House, Moscow.

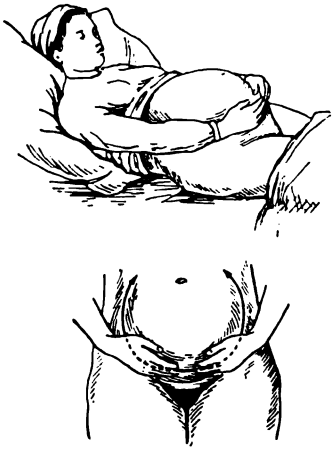


Fig. 3. Light stroking with the hands (almost mere touching) of the lower half of the abdomen combined with inspiration and expiration

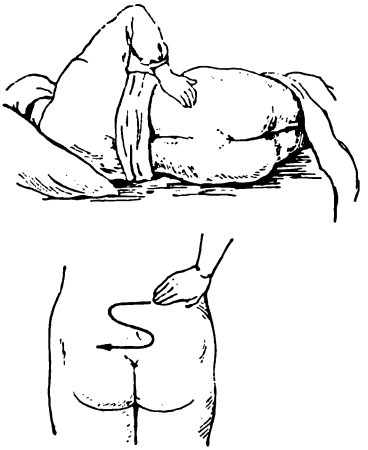


Fig. 4. Light stroking with the hands (almost mere touching) of the lumbosacral region from the sides toward the midline

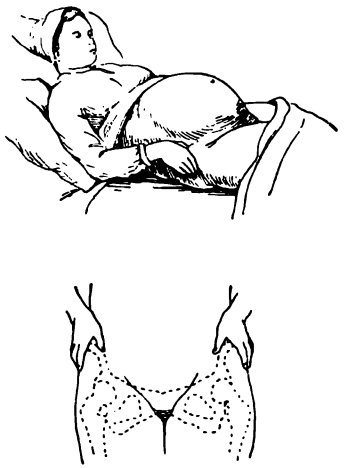


Fig. 5. Pressing the "pain prevention" points in front at the anterosuperior iliac spines

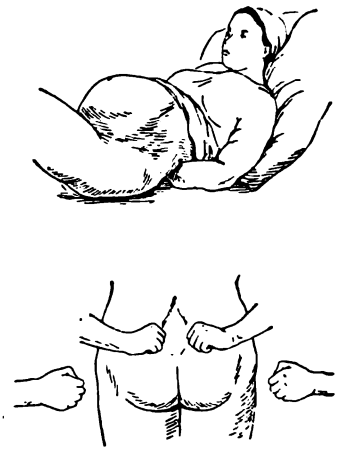


Fig. 6. Pressing the "pain prevention" points in the back at the lateral angles of the lumbar rhombus

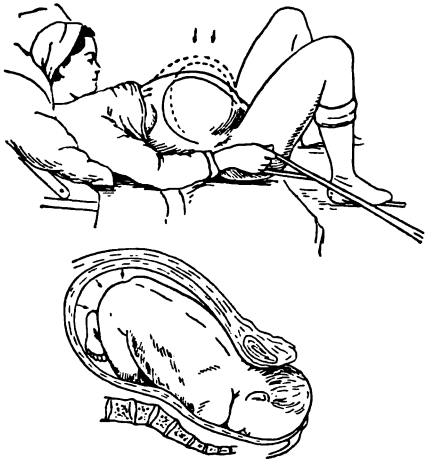


Fig. 7. Expulsion stage

The *first session* is conducted individually and is devoted to a detailed clinical examination of the pregnant woman. During the session the woman's attitude to her forthcoming labour is ascertained. The idea that labour is torture has long been instilled in the woman's mind. During the psychoprophylactic preparation this ungrounded fear is dispelled and the pregnant woman is persuaded that labour is a physiological phenomenon.

The *second session*, like all the rest of the sessions, may be conducted with groups of 5-6 expectant mothers. This session is devoted to a description, in a popular form, of labour as a natural phenomenon and prepares the woman for it by destroying the ungrounded notions that it has to be painful.

The *third and fourth sessions* are devoted to elucidating the first stage of labour, namely, the subjective sensations of the parturient woman. The women are taught correct breathing and special pain prevention techniques to be used during the pangs (Fig. 3-7).

The *fifth session* is devoted to explanation of the second stage of labour and the behaviour of the parturient woman during this stage.

The *sixth session* concludes the preparation. Motherhood is represented as woman's honourable civic duty. During this session the pregnant woman is acquainted with the procedures connected with admission to the maternity home, the manipulations which may be performed during labour, etc.

Thus the pregnant woman gradually develops a calm attitude to her forthcoming labour and is taught how to behave during labour and execute the pain prevention techniques.

PREVENTION OF ABORTIONS

Prevention of abortions is one of the important objectives in the work of the maternity health centres. Legal abortions prevent the great harm done to the woman's health by abortions performed outside medical institutions and frequently by incompetent people. However, the nurse must explain to the women that even an abortion performed in a medical institution may harm their health. This is particularly true of abortions produced during the first pregnancy.

If the work in the maternity health centre is correctly organised, every pregnant woman willingly visits the centre where she is received in a friendly and considerate manner, which predisposes her to discuss frankly all questions connected with her pregnancy and future motherhood.

In the course of individual and group health education lessons the women are explained the grave consequences of abortions performed outside of hospitals. The women learn that such abortions jeopardise their lives or threaten lifelong invalidism, and that an abortion during the first pregnancy may make them barren and produce inflammation of the internal genitalia.

It is also necessary to expose persons who make abortions at home and to report them to the proper authorities.

To prevent abortions, the workers of the maternity health centre (physician, midwife and nurse) also teach their patients to use contraceptives. The nurse must have good knowledge of harmless contraceptives, as well as of their proper use.

CONTRACEPTIVES

The contraceptives, i.e., agents preventing pregnancy, may be mechanical and chemical.

The *mechanical contraceptives* prevent the spermatozoa from entering the cervix uteri from the vagina.

The *chemical contraceptives* create in the vagina a medium in which the spermatozoa are destroyed before they can reach the cervix uteri.

The mechanical contraceptives used by males include rubber preservatives. The spermatozoa discharged during the sexual act do not gain entrance into the vagina but remain in the preservative. The male preservative simultaneously serves as protection against infection with venereal disease. The rolled-up preservative is put on the

glans penis, the penis being in a state of erection, and is gradually unrolled towards the base of the penis.

The mechanical contraceptives used by women include pessaries applied to the cervix uteri or introduced into the vagina where they form a sort of diaphragm. The vaginal pessaries serve as a kind of partition which divides the vagina into two parts—the posterior part with the cervix uteri and the anterior part where the semen is discharged. By covering the external os uteri the cervical pessaries prevent the spermatozoa from penetrating to the cervix uteri.

There are several types of cervical pessaries—metal and rubber.

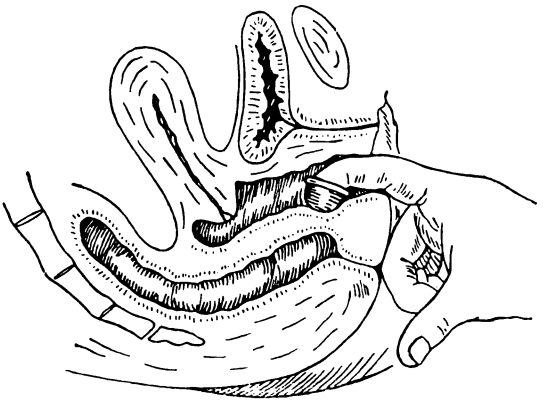


Fig. 8. Introduction of Kafka's pessary into the vagina

Kafka's metal pessary (Fig. 8) looks like a thimble; when applied to the cervix uteri it is held in place by suction. Kafka's pessaries are made of aluminium or silver and are of different sizes—from No. 1 to No. 24. They are selected according to the size and shape of the cervix uteri; numbers 5 to 11 are most commonly in use.

Metal pessaries should not be used in cases of ruptures in the region of the external os uteri. It follows that a metal pessary may be recommended only after a careful gynecological examination, both bimanual and, mainly, with the aid of speculums. Metal pessaries are undesirable not only when there are inflammatory phenomena in the vagina or the cervix uteri, but also in cases in which there are indications of former inflammations (erosions).

Cervical pessaries may be used only when the cervix uteri is absolutely healthy and when there are no erosions in the region of the external os or inflammatory changes in the cervical canal.

The use of Kafka's pessary necessitates systematic medical control to detect an incipient inflammation in due time, stop the use of the pessary and begin treatment.

The pessary is introduced as follows: the vaginal part of the uterus

is exposed with the aid of a speculum and is carefully examined (erosion, endocervicitis). The position and shape of the cervix uteri are determined and the corresponding size (number) of pessary is immediately chosen; then the cervix uteri is swabbed with a disinfectant and dried with a sterile cotton tampon. The boiled (sterilised) pessary, chosen according to size, is grasped with a long sterile forceps, 1 ml of "Prekonsol" paste is squeezed into the pessary and the latter is introduced with the aid of the same forceps into the open vagina and applied to the cervix uteri, after which the speculum is carefully removed and the cervix uteri is examined with two fingers introduced into the vagina to make sure that the pessary does not compress it too tightly. If need be, a larger pessary is used.

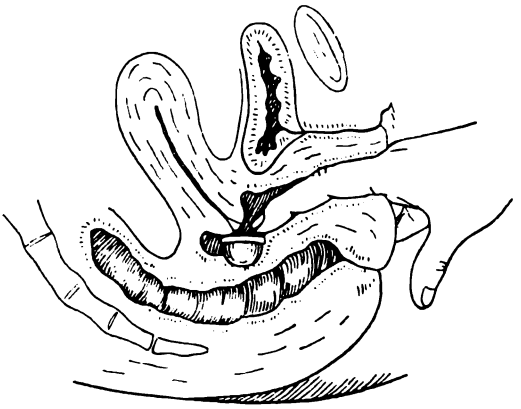


Fig. 9. Kafka's pessary placed under the cervix uteri

The pessary may also be inserted without a preliminary introduction of a speculum into the vagina, but, naturally, only if the physician (or midwife) has already made a careful gynecological examination (bimanual and with the aid of speculums). To do this, the physician (midwife), after thoroughly washing his (her) hands, puts the pessary, like a thimble, on the index finger and introduces it into the vagina (Fig. 8). The pessary is pressed against the posterior wall of the vagina and is moved along this wall to the posterior fornix under the cervix uteri. As soon as the edge of the pessary has reached the cervix uteri the finger is removed from the pessary (Fig. 9). A properly inserted pessary easily adheres by suction, owing to the negative pressure forming between it and the cervix uteri (Fig. 10).

A metal pessary is inserted by a physician, midwife or nurse upon cessation of the menses. Such a pessary may be worn for not more than 10 days, after which it is removed (by a physician, midwife or nurse) and the cervix uteri must be examined without fail.

The *rubber pessary* with a heavy or cast rubber rim is a little rub-

ber bag manufactured in several sizes—from No. 40 to No. 65, which makes it possible to choose a pessary according to the size and shape of the cervix uteri. The pessaries No. 40, No. 50 and No. 55 are most generally in use. A rubber pessary is inserted like a metal one. It is coated with "Prekonsol" paste, pressed between the fingers, introduced into the vagina and applied to the cervix uteri. When on the cervix uteri, the pessary presses with its rim against the walls of the fornix of the vagina, which imparts certain stability to it. Such a pessary is simultaneously cervical, like a metal pessary, and vaginal, since it divides the vagina into anterior and posterior parts.

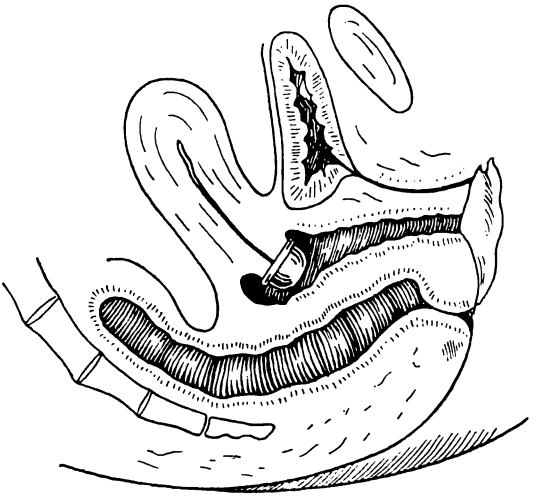


Fig. 10. Kafka's pessary placed on the cervix uteri

The woman is taught to use a rubber pessary by herself. At first she carefully washes her hands. Then, while squatting, she introduces two fingers into the vagina and feels for the cervix uteri. After learning to find the cervix uteri the woman takes the pessary (after first carefully washing and boiling it), compresses it between two fingers and introduces it into the vagina, open side up, moving the pessary along the posterior wall into the interior. As soon as the edge of the pessary reaches the fornix of the vagina it is applied with the aid of the fingers to the cervix uteri which can now be felt through the rubber wall of the pessary.

A rubber pessary may not be left in the vagina for more than 2-3 days. The woman may put it in and remove it, but must visit a physician, midwife or nurse every 2 months for a check-up.

The use of the aforesaid pessary is contraindicated in cases of erosion of the cervix uteri, inflammatory diseases of the uterus and uterine appendages, uterine and vaginal descent.

The "KR" rubber pessary (Fig. 11) is not a cervical but a vaginal pessary because, when inserted in the vagina, it forms a partition which hinders the spermatozoa from penetrating to the cervix uteri. Unlike other pessaries, this one may also be used in cases of ruptures of the cervix uteri and in feebly pronounced catarrhs of the cervical mucosa.

The "KR" pessary is a small rubber bag with a spiral metal spring inside its rim. Introduced into the vagina the pessary rests with its lower edge against the posterior fornix and with its upper edge against the anterior vaginal wall behind the symphysis pubis (Fig. 14).

Fig. 11. Coating the "KR" pessary with paste

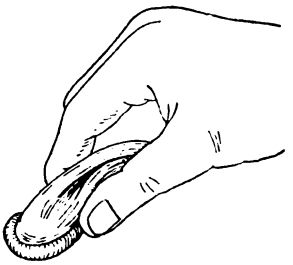


Fig. 12. Grasping the folded "KR" pessary

The pessary divides the vagina into an anterior part in which sperm collects, and a posterior part in which the cervix uteri is located and thus protects the latter against penetration by spermatozoa. This pessary comes in different sizes, No. 40 to No. 70 (at intervals of 5 numbers). It is chosen according to the width of the vagina. A pessary 45-50 mm in diameter should be used in cases of a long and narrow vagina and 60-70 mm in diameter in cases of a spacious vagina.

The "KR" pessary is inserted in the following manner: it is coated on all sides with "Prekonsol" paste (Fig. 11), is folded (Fig. 12) and introduced into the vagina which is dilated by the fingers of the other hand; after introduction the pessary is moved along the posterior vaginal wall (Fig. 13) until it rests against the wall of the posterior fornix of the vagina (Fig. 13). At this point the spring is released and, as soon as the pessary has expanded, its anterior edge is pressed with the fingers against the anterior vaginal wall behind the symphysis pubis (Fig. 14).

To avoid improper insertion of the pessary, it is necessary carefully to check on its position, since it may be erroneously introduced from the very beginning into the anterior rather than the posterior fornix, in which case the cervix uteri remains uncovered and accessible to the spermatozoa.

Women learn to use the aforesaid pessaries relatively easily and quickly. Usually they introduce the pessary while squatting, observing all the aforesaid rules of hygiene (cleanliness of hands) and using the afore-described technique of inserting the pessary and checking

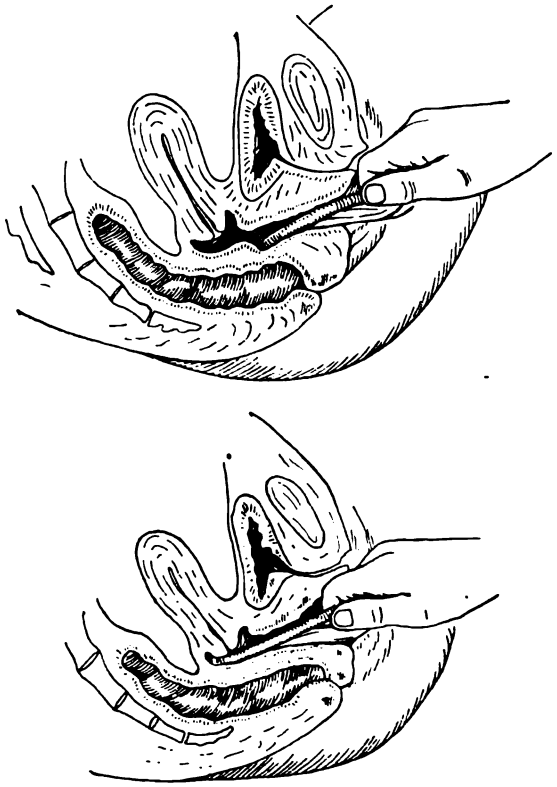


Fig. 13. The "KR" pessary is moved along the posterior vaginal wall (top); the "KR" pessary is in the posterior fornix (bottom)

on its position. Women must be taught to do this by a midwife or nurse, but must do it all themselves in a squatting position, while the midwife must make sure that the pessary has been properly inserted.

The pessary is removed also by the woman herself. To do this, she introduces a finger into the vagina, feels for the anterior edge of the pessary behind the symphysis pubis, grasps it with her flexed finger and takes it out of the vagina.

As was already mentioned, rubber pessaries may not be left in the vagina for long. Under the influence of the vaginal secretion the rubber liberates sulphur which irritates the vaginal walls.

The pessaries must be inserted shortly before sexual intercourse and removed from the vagina 10-12 hours after it. Before and after removal of the pessary it is necessary to douche the vagina with a disinfectant (weak solution of potassium permanganate, wood vinegar, boric acid, etc.).

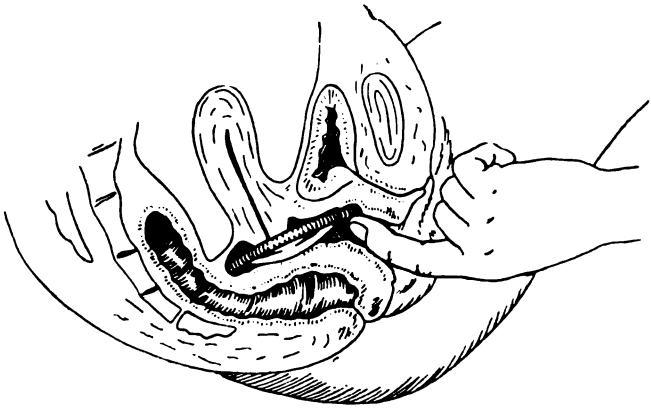


Fig. 14. The anterior edge of the "KR" pessary is placed behind the symphysis

The pessary is thoroughly washed with soap and water, dried and wrapped in a clean napkin. Before use the pessary is swabbed with a weak disinfectant.

The afore-described mechanical contraceptives are relatively harmless and effective if they are properly used and there are none of the aforesaid contraindications; of course, they require a periodic check-up by a physician or midwife.

The midwife and nurse must explain to the woman that it is dangerous to use such mechanical contraceptives as all manner of intracervical and intrauterine springs, golden, platinum, stainless steel or silkworm rings. The contraceptive action of such agents is based mainly on the fact that they produce a protracted inflammation of the mucosa which prevents pregnancy.

Besides mechanical contraceptives there are also *chemical contraceptives*. All these agents pursue the same aim of creating in the vagina a medium in which the spermatozoa may be destroyed as soon as they enter the vagina. However, the chemical agents possessing this property must not be toxic to the female organism and must not irritate the tissues of the sexual tract. Moreover, these agents must not diminish the sexual sensations or emit a bad odour.

Vaginal suppositories, tablets and paste are most frequently used. These are introduced into the posterior fornix (Fig. 15) before sexual intercourse.

The vaginal suppositories, paste and tablets must be prepared from substances which quickly and easily dissolve in the vagina. They usually contain quinine, quinosol, boric acid, gramicidin and other substances.

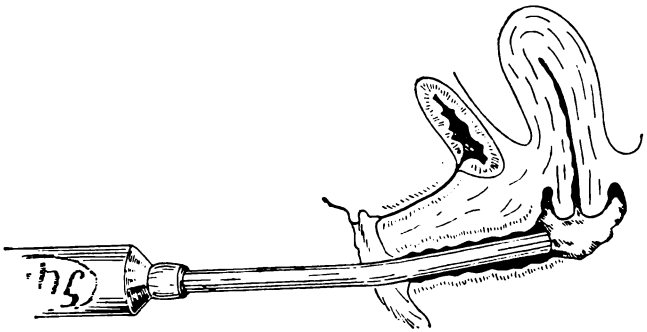


Fig. 15. Introduction of paste into the posterior vaginal fornix

"Prekonsol" ointment or paste, a quinosol-containing paste, and gramicidin paste are quite effective. Owing to its consistency the paste introduced into the vagina spreads uniformly along all its walls and covers the external os uteri. The paste is removed from the vagina on the day following its introduction by douching with a weak warm disinfectant.

The afore-described chemical contraceptives are ineffective in cases of women with muscular ruptures of the perineum and pelvic floor, and descent of the vaginal walls. It is first necessary to correct such defects by a plastic operation, after which the aforesaid contraceptives will prove more effective.

The chemical contraceptives include vaginal douching and irrigation with water containing acid substances (wood vinegar, boric acid, etc.) directly after sexual intercourse. It is also desirable to make a douche before coitus, in which case part of the medicinal substance is retained in the vagina and acts on the spermatozoa chemically, as well as mechanically.

Sponges and tampons, which simultaneously produce mechanical and chemical action, are also used as contraceptives. A marine sponge, the size of a small chicken egg, encased in a silk net may likewise be used; a long thread is attached to the sponge so that the latter may be removed by it from the vagina.

The sponge is soaked in a medicinal substance (2 per cent boric acid solution; wood vinegar solution—1 tablespoonful per glass of water; 1-2 per cent acetic acid solution; 1-2 per cent quinine solution) and before sexual intercourse is inserted in the vagina as deeply as possible so that it may cover the cervix uteri. It is removed immediately or sometime after intercourse; after removal of the sponge the vagina is douched with some weak disinfectant from Esmarch's can or with the aid of a special balloon.

Some authors recommend introduction into the vagina of one more sponge soaked in the same medicinal substance immediately after sexual intercourse, removal of both sponges simultaneously within several hours and a follow-up by douching.

It is quite difficult to keep the sponge as clean as necessary, for which reason it is replaced by a large cotton tampon. Such a tampon is made of a piece of cotton, which is 2-3 times as large as the usual medical tampon, with a long thread attached to it. The tampon is soaked in a medicinal substance and is inserted deep in the vagina. The hands must be thoroughly washed before introducing the tampon.

The mucosa of the uterine cavity must not be painted (cauterised) with such chemical substances as iodine, since this leads to grave changes in the mucosa. Moreover, iodine very often gains entrance into the uterine tubes and the abdominal cavity and causes their inflammation, which is in its turn aggravated by adhesive inflammation of the uterine tubes with subsequent permanent sterility. Absorption of iodine into the organism may lead to a general disease—iodism. This method of contraception is dangerous.

The contraceptives must be prescribed only by a physician or midwife. Proper choice of the method produces proper results.

In prescribing contraceptives the physician or midwife are guided by the anatomy and topography of the sexual organs, their state, and the woman's living conditions and cultural level. The woman must be taught proper use of these contraceptives.

CONTROL OF ADVANCED FORMS OF CANCER OF THE FEMALE GENITALIA

A prominent part in accomplishing this important task of the maternity health centre is played by the nurse.

It is well known that whatever method of treating cancer is used the outcome of the treatment wholly depends on the stage of the disease during which the treatment was instituted. The sooner cancer has been identified and its treatment begun, the more favourable the results of the treatment.

Systematic prophylactic examinations of all women both at work and at the maternity health centre are one of the basic methods of early detection of malignant tumours. The

nurse actively assists the physician in these examinations; she arranges the place for the examinations, prepares the required number of necessary instruments (speculums, dressing forceps), continuously sterilises them, helps in registering the women, etc. She makes out cards (see p. 40) under the physician's instructions for all the patients discovered during the examinations, sees to it that they take regular treatment, and visits at home or at work those who fail to report to the maternity health centre in due time. It is thus possible to prevent cancer from being neglected and thereby to save women from death.

SOCIAL AND LEGAL AID OFFICES

At the maternity health centres women are given social and legal aid.

A number of laws on labour protection of pregnant women and nursing mothers, the family and marriage, and certain articles of the Criminal Code (p. 22) are aimed at protecting the interests of the mother and child. The nurse must be well versed in these laws because in her work she must very frequently deal with questions pertaining to the day-to-day and legal service of mothers and children. These questions arise already at the maternity health centre (control of abortions, infection with venereal disease, rape, violation of the woman's labour rights), in the maternity home (placement of the newborn baby in a crèche or children's home) and in infant health centres (improvement of the child's living conditions, control of child morbidity and mortality). Thus, legal aid to the mother and child is closely connected with all the problems facing the mother and child protection agencies. However, these problems do not exhaust the work of the social and legal aid offices. Legal aid without simultaneous social aid would, in a considerable number of cases, prove of little effect.

There are social and legal aid offices in infant and maternity health centres and in large maternity homes.

At the maternity health centres the legal and social aid consists in timely discovery of unmarried mothers, divorced and under-age pregnant women, pregnant women with un-

favourable family and living conditions, cases of infection with venereal diseases, rape, etc. The very list of questions subject to the attention of the social and legal aid offices predetermines the character and aim of the aid they administer.

The objectives of the social and legal aid offices at maternity health centres include a persistent struggle against abortions, especially abortions produced outside of hospitals.

If an unmarried pregnant woman has not applied to the maternity health centre, she must be registered by the social and legal aid office immediately upon admission to the maternity home. The very fact that the pregnant woman who lives in a certain locality has failed to apply to the maternity health centre often suggests that something may be wrong; this is discovered during the questioning of the parturient woman and puerpera at the maternity home.

The tasks of the social and legal aid worker of the maternity home include a detailed questioning of the mother and consideration of all indirect data, namely: has she received her maternity leave? Did she visit the maternity health centre? Has she prepared the baby things? Does anyone come to visit her (consequently, do her relatives know about her childbirth)? Does she correspond with anybody? Did anyone bring her to the maternity home and will anybody call for her? This worker must also see how the mother nurses the baby and if she nurses it at all, etc.

The duties of the worker of the social and legal aid office include enlisting the entire medical personnel of the maternity home in taking care of the unmarried mother and investigating her living conditions while she is in the maternity home, summoning her relatives to settle her housing problems, explaining to the puerpera the rules for receiving motherhood allowances, sending her and the child home with an escort, immediate establishment of patronage, etc. Thus, by receiving aid the mother feels that she is not alone, and this gives her moral support.

The nurse working at the maternity health centre or in the maternity home must not think, however, that this work is done only by the lawyer or nurse of the social and legal aid office of the maternity health centre. During registration of the pregnant woman at the maternity health

centre or already in the ward the nurse must find out through questioning the woman whether or not the conditions of her life necessitate intervention of a lawyer. She must report all such women to the social and legal aid office, and the worker of this office sees to it that all these women are quickly given the aid to which they are entitled.

The nurse must report to the ward physician all the women who are in need of legal aid. She must display particular concern at the time these women are discharged from the maternity home. A woman may be discharged from the maternity home only after the ward nurse has been informed that the social and legal aid office, or the lawyer or nurse working at the maternity home have done all they could to help the puerpera, and the latter will not find herself in difficult straits after her discharge from the maternity home.

HEALTH EDUCATION

Health education is a fundamental part of the nurse's work both at the maternity health centre and in the obstetric and gynecological hospital. The maternity health centre is primarily a prophylactic institution. Systematic observation of the pregnant woman is aimed at preventing pathology of pregnancy, parturition and puerperium. Normal pregnancy and parturition exclude the possibility of pathology in the fetus. Rational feeding and regimen of the newborn favour their growth and normal development. Control of abortions reduces the incidence of gynecological diseases. Extensive prophylactic examinations of women prevent neglect of cancer, etc.

This extensive and important work can be successfully accomplished only with suitable help of the women themselves, for which purpose it is necessary that each woman should understand how important all the measures carried out are for her own health and for that of her child. These measures are the more effective the higher the health education of the population. This shows how significant health education is in the day-to-day practice.

Whatever work the midwives and nurses do at the maternity health centre and in the maternity home, it must simul-

taneously contain elements of health education. If special talks are delivered to women, these talks must be illustrated by concrete examples from practice. Only under these conditions can the health education of the population be extended and its health improved.

The nurse must never forget it. Most of the difficulties in the work of a midwife and nurse are due precisely to inadequate health education of the women.

RECORDS AT MATERNITY HEALTH CENTRES

All women—expectant mothers and gynecological patients—applying to a maternity health centre must undergo a detailed registration, repeated medical examinations and, if necessary, take a course of special treatment. The nurse must keep accurate and detailed records of all these women. The registration office of the maternity health centre has special files with the records of the pregnant women and gynecological patients, which enable the personnel quickly to find the card of the woman who is revisiting the maternity health centre and to exercise proper patronage.

Every district obstetrician and gynecologist has in his office a special locker with three or four sections for the files. One section contains all the cards (folded double) of the pregnant women received during the previous month. The cards are arranged in the order of their appointments during the current month, those of the pregnant women with some form of pathology being kept in the foreground with special marks. The cards of the expectant mothers reporting to the maternity health centre during the current month are filled in in detail and are placed in the adjacent section where they are also arranged according to these women's appointments (first and second halves of the month); here, too, the cards of the pregnant women with some form of pathology are in the foreground with special marks.

Thus, as the expectant mothers report to the maternity health centre, their cards are transferred from one section of the locker to another. Towards the end of the first and second halves of each month all the pregnant women, who failed to report for a regular examination in due time, are

known, and a community nurse is immediately sent to them, as also to the women with pathological pregnancy.

The cards of the pregnant women starting on their maternity leave are kept in the same files, but in a special section of the locker, since these women are kept under special observation.

Records are also kept of gynecological patients; these records, filed in another locker, cover mainly the women subject to observation as outpatients (with diagnoses of erosion of the cervix uteri, precancerous condition, benign tumours, functional uterine hemorrhages, climacteric uterine hemorrhages, descent and prolapse of the genitalia, infertility, etc.). The branches of the records are named according to the diagnosis of the diseases. The cards in each section are arranged according to the next appointed visit.

Both files are kept by the nurse (under control of a physician) and are systematically checked on, both by the nurse and the physician.

This system of records is necessary for every maternity health centre. Properly kept records make it possible to conduct constant observation of all the pregnant women with obstetric pathology, to know in due time which pregnant women have failed to report to the maternity health centre at the appointed time and to send the community nurse primarily to these women.

Thus after a single home visit to all the pregnant women the nurse must exercise patronage not of pregnant women in general, but primarily of women noted to have some form of pathology, those who have failed to report to the maternity health centre at the appointed time, those who are on maternity leave and do not visit the maternity health centre, and those who have not attended the sessions of psychoprophylactic preparation for childbirth (p. 24). Such patronage is possible only if the records are kept properly.

The records of gynecological patients pursue approximately the same aims; in these cases it is important to prevent in good time grave diseases (malignant degeneration of a tumour, development of erosion into a cancerous tumour, etc.). These records show the physician and nurse what patient failed to report for an examination, who has to be summoned, visited at home or at work, etc.

The records thus ensure organisation of efficient work at the maternity health centre, enable the personnel (physician and nurse) to utilise their time more rationally and render a daily check-up of all cards unnecessary.

OBSTETRIC AID

There are two ways of administering obstetric aid—*in the hospital and at home*. The former implies that obstetric aid is rendered in a maternity institution (maternity home, obstetric department in a hospital, collective farm maternity home, medical and obstetric station with maternity beds). The latter implies that the woman is administered obstetric aid by the obstetrician or midwife at her home.

All labour, even if it appears quite normal at first, may subsequently give various complications whose prevention and elimination may require timely intervention of a physician. However, it is not always possible to foresee pathological labour and it is often necessary to administer special obstetric aid urgently.

From the foregoing it is clear that the hospital system of obstetric aid is the most expedient and perfect. In a maternity home the labour is managed in a proper atmosphere and under constant observation of a midwife and obstetrician, so that the parturient woman is given surgical aid any time she may need it.

In Soviet cities obstetric aid is given only in hospitals. In the countryside hospital obstetric aid is increasing with each passing year, while the few cases of childbirth at home are also provided with medical aid.

MATERNITY HOMES

A maternity home is a medical institution in which a physician, intermediate and junior medical personnel are on duty 24 hours a day.

A maternity home has the following departments:

1) a pre-examination room in which healthy parturient women are segregated from the sick on admission;

2) normal obstetric department which includes: a) an examination room in which the women admitted from the pre-examination room are registered and subjected to sanitary treatment; b) antepartum room in which the women are kept during the first stage of labour; c) labour room in which the babies are delivered; d) postpartum rooms where the women are kept for 9 days after childbirth; e) obstetric operating room in which all obstetric operations (vaginal) are performed; for operations involving abdominal section the maternity home must have another, so-called major operating room; f) a department for newborn babies with small wards or rooms for isolating sick children and a small ward or room for premature children with special apparatus to keep them warm; g) a wash-room, for washing the oilcloths, with a drying installation; h) a wash-room with a drain for the bedpans; i) pantry; j) linen-rooms; k) toilets;

3) second obstetric department in which parturient women and puerperas suspected of having some disease and, consequently, capable of spreading infection are placed. Puerperas who have fallen ill are also transferred there from the normal obstetric department. The second department has the same rooms as the normal, but is smaller;

4) department of pathological pregnancy in which women with pathological pregnancy are placed (pernicious vomiting, nephrosis, pre-eclampsia, heart diseases, hemorrhages, contracted pelvis, etc.);

5) septic department (is not found in all maternity homes) isolated from the obstetric department. Grave puerperal cases are placed in the septic department. If the maternity home has no septic department, such patients are transferred to a corresponding department of another maternity home or the gynecological department of a hospital;

6) laboratory for various tests and analyses.

Large maternity homes also have X-ray rooms.

COLLECTIVE FARM MATERNITY HOMES

In addition to standard collective farm maternity homes, the maternity homes on collective farms are housed in the best buildings which have at least 5 rooms. All collective farm maternity homes have to satisfy strict requirements.

A collective farm maternity home must have: 1) an anteroom or warm entrance hall, 2) examination room, 3) labour room with one bed, 4) ward with 2 or 3 beds, 5) kitchen, 6) room for the personnel isolated from all the foregoing rooms, 7) toilet. All these rooms are necessary to ensure normal labour and puerperium.

A collective farm maternity home is usually designed for two or three beds, which, if properly utilised, make it possible to deliver more than 100 children a year; such a maternity home can fully provide obstetric aid for a collective farm or group of collective farms with a total population of 3,500-4,000.

Only normal labour and normal puerperium are managed in a collective farm maternity home. All pregnant women with any pathology at the time of labour and, especially, those falling ill after parturition must be immediately sent to the nearest maternity home or hospital. Every collective farm maternity home is usually affiliated with the nearest district hospital with which it maintains close contact; the hospital in its turn instructs the personnel of the collective farm maternity home and checks on its work. It should be remembered that after transfer of a sick puerpera to the hospital the collective farm maternity home must be thoroughly disinfected, especially the ward in which the sick woman was kept; the collective farm maternity home must do this before it is allowed to continue its work.

A collective farm maternity home is headed by a midwife who also works in this home's maternity health centre. The quarters in which the midwife lives and receives the pregnant women must be isolated from the maternity home.

The objectives of a collective farm maternity home include management of labour and in very urgent cases visits of parturient women for managing labour at their homes, patronage of pregnant women and puerperas, determination of maternity leave, health education work, patronage of nurslings, and first aid to pregnant women and puerperas.

Thus, a collective farm maternity home is an institution where the collective farm women not only receive obstetric aid, but also acquire sanitary and hygienic habits and learn how to rear their children.

MEDICAL AND OBSTETRIC STATIONS

If the medical and obstetric station is housed in a building which satisfies the requirements of a collective farm maternity home, 1-3 beds *for managing normal labour* may be installed in it.

A medical and obstetric station employs a doctor's assistant and a midwife, the latter carrying out all the prophylactic and therapeutic work connected with mother and child protection and serving the newborn and all children up to one year of age. If the station has no maternity beds, the midwife administers obstetric aid at the parturient women's homes. The midwife of the station has to know all the pregnant women of her district, must reveal in good time the pathology which may be expected during forthcoming labour and refer such pregnant women to a physician.

For obstetric aid at home there is a special obstetric bag in which the midwife must have everything required for obstetric work.

CHAPTER III

ANATOMY AND PHYSIOLOGY OF THE FEMALE GENITALIA

The female genitalia are divided into external and internal organs.

EXTERNAL GENITALIA

The external female genitalia include the mons Veneris, labia majora, labia minora, clitoris and hymen (Fig. 16).

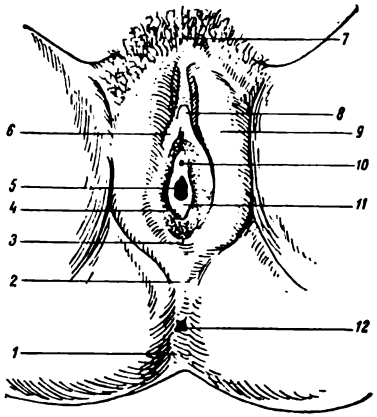


Fig. 16. External genitalia
1—coccyx; 2—perineum; 3—posterior vaginal commissure; 4—orifice of Bartholin's duct; 5—vaginal entrance; 6—labium minus; 7—mons Veneris; 8—clitoris; 9—labium majus; 10—external urethral orifice; 11—hymen; 12—anus

The **mons Veneris** is the lowest portion of the anterior abdominal wall located over the symphysis pubis. Since this

part has a good deal of subcutaneous fat the mons Veneris protrudes in the form of a cushion. In sexually mature women this part is covered with short and dense curly hair. The part of skin which is covered with hair is sharply demarcated above the mons Veneris with a horizontal or slightly concave line which imparts to it the shape of a triangle with its base up. Such growth of hair is characteristic of women, since in men the hair spreads from the pubis upward narrowing down conically towards the navel. Before reaching sexual maturity girls have no hair on the mons Veneris; in elderly women the hair on the mons Veneris becomes scantier.

The **labia majora** are two folds of skin with a wide layer of loose connective tissue inside. The labia enclose the vaginal introitus (entrance). In women who have not had any sexual experience the internal borders of the labia majora are in close contact with each other and, if the thighs are moderately abducted, the vaginal entrance is closed; in women who have had sexual experience or have given birth to children the labia majora are parted and the vulval entrance is more or less gaping.

In front the labia majora pass into the mons Veneris and in the rear they join and form the posterior vaginal commissure.

The space between the posterior vaginal commissure and the anus is called the perineum and is made up of muscle tissue.

The skin of the labia majora contains a large number of sebaceous glands. *Bartholin's glands* are located in the lower part of the labia majora; the efferent duct of these glands opens at the entrance to the vagina on the inside of the labia minora where the latter are connected with the labia majora. These glands produce a mucous secretion with an alkaline reaction, which moistens the entrance to the vagina. In sick women Bartholin's glands are not infrequently the site of accumulation and development of various pathogenic microorganisms, particularly frequently of gonococci, which gain entrance into these glands.

The **labia minora** are located at the inner surface of the labia majora and are thin pinkish folds of skin enclosing the vaginal entrance from the sides. The labia minora are

usually much smaller than the labia majora and are concealed under the latter.

The **clitoris** is located in the upper corner of the vaginal introitus; it consists of a glans and two cavernous bodies and contains a large number of nerves and a vast network of

Fig. 17. Vaginal entrance of a woman who has borne no children. Lacerations of the hymen after sexual intercourse

Fig. 18. Vaginal entrance of a woman who has borne children, showing the remains of the hymen, the so-called hymenal caruncles

blood vessels. The external urethral orifice is located 1-1.5 cm below the clitoris.

The **female urethra,** unlike that of the male, is much shorter (it averages four centimetres in length), has a wider lumen and is easily distensible.

At the external opening of the urethra there are tubular structures; these are the so-called paraurethral ducts or *Skene's glands* whose secretion moistens the urethral opening.

The space enclosed between the labia minora and running into the interior to the hymen is called the *vestibule of the vagina* or the *atrium vaginae.*

The **hymen** is located on the border between the vestibule and vagina. It is a thin transverse partition with an opening in the middle, the opening varying in form and location. The hymen contains a large number of nerves and blood vessels, for which reason its break during the first sexual intercourse is painful and is in some cases attended with a profuse hemorrhage. During sexual intercourse the hymen is broken mainly radially and as a result assumes the form, as it were, of several flaps. After childbirth these flaps change into structures resembling warts or nodules, the so-called *hymenal caruncles* (Fig. 17 and 18).

INTERNAL GENITALIA

The female internal genitalia include the vagina, the uterus with the uterine tubes (oviducts) and the ovaries (Fig. 19).

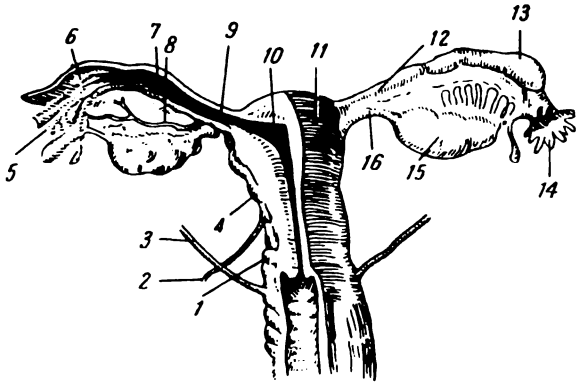
The **vagina** is a tube, slightly convex posteriorly and beginning immediately after the hymen. The anterior and posterior walls of the vagina are in contact with each other. The vagina of an adult woman is 7-8 cm long along the anterior wall and 9-10 cm long along the posterior wall.

On the sides the walls of the vagina are smooth; in front and in the rear the vaginal walls form *transverse folds*. Owing to these folds the vagina can be distended into a long tube without breaking during labour. Girls do not have such folds since the latter have not yet formed; in old age the folds smooth out again.

The cervix uteri projects into the vagina. The vaginal walls form around the cervix uteri four dome-shaped distensible *fornices*, thus closing the vagina on top. The *anterior* fornix is located between the cervix uteri and the anterior vaginal wall, the *posterior* fornix—between the cervix uteri and the posterior vaginal wall, while the two *lateral* fornices are located between the cervix uteri and the lateral vaginal walls. The posterior fornix is the deepest and the secretions entering the vagina from the uterus usually accumulate in it; during sexual intercourse the greater part of the semen (sperm) usually passes into the posterior fornix.

The vagina has no glands, but its cavity always contains

a small amount of a liquid secretion which moistens the surface of the vaginal walls. The vaginal secretion is a secretion of uterine glands with an admixture of fluid exuding from the vessels located in the vaginal walls. The secretion is of the colour of diluted milk, sometimes with an admixture of, as it were, white crumbs. The vaginal secretion contains large numbers of special bacteria, so-called *vaginal bacilli*. These bacilli produce lactic acid which creates in



Fip. 19. Internal female genitalia

1—cervical branch of the uterine artery; 2—uterine artery; 3—ureter; 4—ascending branch of the uterine artery; 5—fimbriae; 6—ampulla of the uterine tube; 7—isthmus of the uterine tube; 8—ovarian vessels; 9—interstitial part of the uterine tube; 10—uterine cavity; 11—peritoneal coat of the uterus; 12 and 13—uterine tube; 14—ampulla and fimbriae of the tube; 15—ovary; 16—proper ligament of ovary

the vagina a weakly acid medium preventing multiplication of pathogenic bacteria. The different bacteria which gain entrance into the vagina from without are usually destroyed or considerably attenuated. In cases of considerable decrease in the number of vaginal bacilli, and the more so in cases of their disappearance, the acidity of the vaginal medium diminishes and various pathogenic microorganisms begin to multiply, sometimes causing different diseases. In such cases the vaginal discharge changes in colour and odour.

In untidy women the vaginal discharge accumulates in

the external genitalia and decomposing emits an unpleasant odour; it also irritates the skin of the external genitalia and the internal surfaces of the thighs.

Fig. 20. First degree vaginal cleanliness

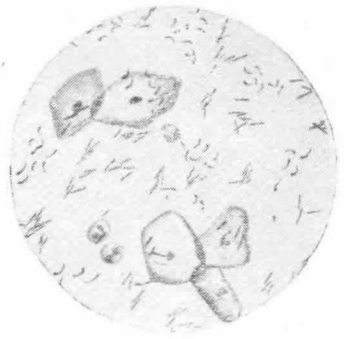


Fig. 21. Second degree vaginal cleanliness

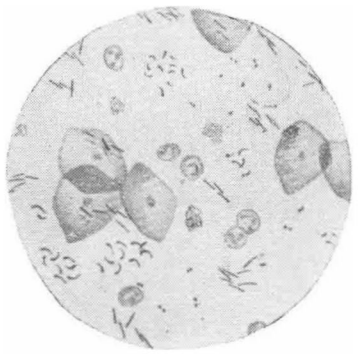


Fig. 22. Third degree vaginal cleanliness

Fig. 23. Fourth degree vaginal cleanliness

Microbial Flora of the Vagina. Four degrees of vaginal cleanliness are distinguished according to the nature of the microflora (Fig. 20, 21, 22 and 23). In *first degree* cleanliness the vaginal secretion contains only vaginal bacilli and epithelial cells, while bacteria are absent. In *second degree* cleanliness vaginal bacilli, epithelial cells, single leuko-

cytes and separate microbes are found in the vaginal secretion. In *third degree* cleanliness the vaginal secretion contains few vaginal bacilli, some epithelial cells, many leukocytes and numerous microbes. In *fourth degree* cleanliness there are no vaginal bacilli, few epithelial cells and very many leukocytes, streptococci and other bacteria in the vaginal secretion.

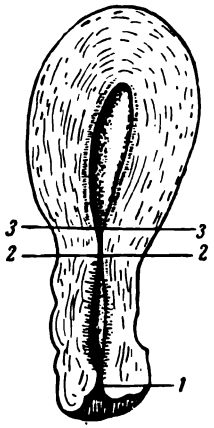


Fig. 24. Longitudinal uterine section (anteroposterior)

1—external os uteri; 2 and 3—internal os uteri

The **uterus** of an adult woman is pear-shaped and somewhat flattened anteroposteriorly (Fig. 24). With its narrow end, i. e., the *cervix*, the uterus protrudes into the vagina constituting the *vaginal part of the uterus*. The wider part of the uterus, the *corpus uteri* (body of the uterus), is located in the abdominal cavity (in the cavity of the minor pelvis). A normal uterus of an adult woman, i.e., the body and cervix, is 8-9 cm long. A nongravid uterus weighs an average of 50 g. The corpus uteri constitutes almost two-thirds and the cervix but one-third of the total length of the uterus of an adult, sexually mature woman. In girls not yet sexually mature the correlations of the body and cervix are the reverse, i.e., the cervix is longer than the body. Sometimes a uterus with a short corpus and very long cervix is found in adult women; such a uterus is underdeveloped and is known as *infantile*.

Usually the cervix uteri is cylinder-shaped and, if the uterus is in proper position, is directed to the rear and downward. The opening of the cervix uteri directed into the vagina is called the external os uteri.

The *external os uteri* of women who have never borne children has the shape of a rounded hole (Fig. 25). During the very first childbirth the external os somewhat tears along the sides and in women who have borne children it has the shape of a slightly open transverse fissure or is stellate and has rents (Fig. 26).

The *internal os* is located in the area in which the cervical canal enters the uterine cavity.

The *uterine cavity* has the shape of a triangle. Its lower angle corresponds to the borderline between the uterine cavity and the cervix uteri, i. e., the internal os, while the two upper angles are located on the sides of the fundus uteri, in the region of the openings of the oviducts (Fig. 27).

Fig. 25. External os uteri of a woman who has borne no children

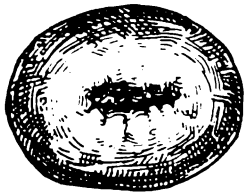


Fig. 26. External os uteri of a woman who has borne children

Three layers are distinguished in the uterine wall. The internal layer—*mucous membrane* (*endometrium*)—is lined with single-layered cylindrical ciliated epithelium which contains tubular glands; the cilia of this epithelium vibrate in the direction of the internal os. The middle, most powerful, *muscular layer* (*myometrium*) consists of smooth muscle fibres; this layer grows more powerful from the cervix uteri towards the fundus uteri. The third layer—external, so-called *serous membrane of the uterus* (*perimetrium*)—is formed by the peritoneum which descends from the posterior wall of the urinary bladder to the anterior wall of the uterus, covers its fundus and posterior wall, and extends to the rectum.

As the peritoneal fold passes from the urinary bladder to the anterior uterine wall and from the posterior uterine wall to the anterior wall of the rectum free spaces are formed, i.e., depressions resembling pouches; in front of the uterus there is the vesicouterine pouch and in the rear—a deep pocket, the *rectouterine pouch* also called the pouch of Douglas (Fig. 28). Laterally from the uterus the peritone-

al folds cover the oviducts; under the oviducts they join and form the so-called broad ligaments.

The **uterine tubes** (Fig. 19), or oviducts, issue from the fundus uteri on the right and left and run sideward to the lateral walls of the pelvis. An average tube is 10-12 cm long; the free end of each tube has the shape of a fringed funnel; the fringes of the tubes, the *fimbriae*, are suspended into the abdominal cavity near the ovaries.

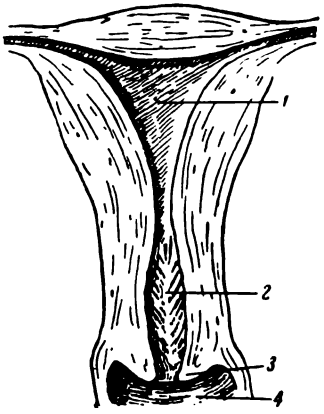


Fig. 27. Cavity of uterus and cervical canal (vertical section through the tubal angles along the entire length of the uterus)

1—uterine cavity; 2—cervical canal; 3—vaginal fornix

Three layers are also distinguished in the wall of the oviduct—the internal or mucous, the middle or muscular, owing to which the oviducts are capable of contracting, and the external or peritoneal. The mucous membrane of the canal of the oviduct, like that of the uterus, is lined with ciliated epithelium, the cilia vibrating in the direction of the uterine cavity. After gaining entrance into the oviduct the ovum moves into the uterine cavity owing partly to the contractions of the muscle fibres of the oviduct wall and partly to the vibrations of the cilia.

Hanging from the oviducts the peritoneal folds grow together under them and form, as was already mentioned, broad ligaments. On the way downward these folds diverge again, the space between the parted folds is filled with connective tissue, so-called *parametric* tissue and this entire region is called the parametrium.

In an adult woman the sexual gland—**ovary** (Fig. 19)—is almond-shaped and has an uneven surface. It is 4 cm long, 1-1.5 cm thick, and weighs 6-8 g.

The ovaries are located on the sides of the uterus, behind the broad ligaments, closer to the walls of the pelvis.

One end of the ovary is attached to the posterior fold of the broad ligament and, as it were, hangs on it; from the internal border of the ovary a ligament—the *proper ligament of the ovary* (Fig. 19)—runs to the corner of the uterus, while the *infundibulopelvic* ligament runs from the external border upward and to the rear.

Two layers are distinguished in the ovary—the *external* cortical and the *internal* medullary. The cortical layer contains at different depths the original or primordial follicles with germ cells. It is in this layer of the ovary that the follicles and ova gradually mature. The medullary layer of the ovary contains a richly developed vascular, lymphatic and nervous network.

The ovary is a gland of both external and internal secretion. The external secretion consists in a periodic discharge of ova together with follicular fluid, the internal—in a discharge directly into the blood of hormones formed in the follicle during maturation of the germ cell and after discharge of this cell from the follicle. The development of the peculiarities of the female organism, the so-called secondary sexual characteristics (the sexual organs are considered primary sexual characteristics) is connected with the passage of the aforesaid hormones (*estrogens*) directly into the blood. The secondary sexual characteristics include the peculiarities in skeletal structure, external appearance (Fig. 35-39), metabolism (deposition of fat on the hips, chest and abdomen), development of the mammae, absence of hair on the face, high timbre of the voice, etc.).

Ligamentous apparatus. Ligaments hold the uterus in a certain position, the corpus uteri being directed to the front and the cervix uteri—to the rear and downward. The angle between the corpus uteri and cervix uteri is obtuse and is directed to the front. This position is known as *anteversion-flexion* (Fig. 28). The uterus is mobile and shifts relatively easily during examination after which it resumes its initial position.

The ligaments supporting the uterus run from it in different directions and are attached to the walls of the pelvis. *Round ligaments* run anteriorly, almost from the very corners of the fundus uteri; they run on both sides to the front and the exterior, enter the inguinal canals through their in-

ternal openings, emerge through their external openings and are attached in the region of the symphysis pubis.

The *broad ligaments* extend from the sides of the uterus to the lateral walls of the minor pelvis.

The *sacrouterine ligaments* run posteriorly from the posterior wall of the uterus to the concavity of the sacrum.

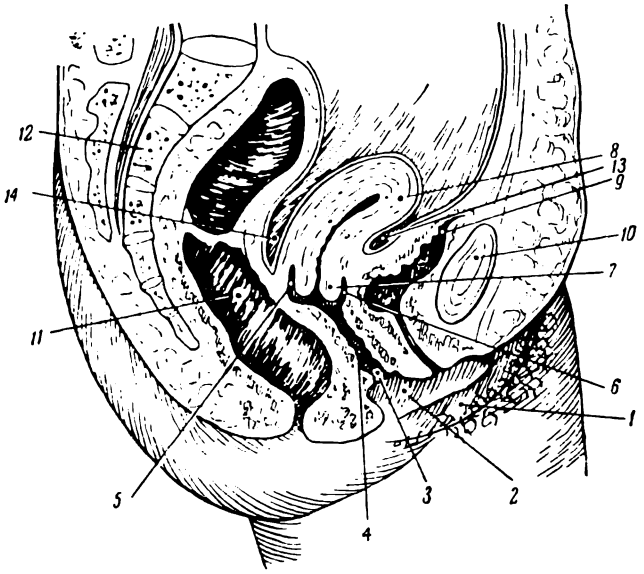


Fig. 28. Internal genitalia and adjacent organs (rectum and urinary bladder) in normal position (longitudinal section)
1—labium majus; 2—labium minus; 3—vaginal entrance; 4—vagina; 5—posterior vaginal fornix; 6—anterior vaginal fornix; 7—cervix uteri; 8—corpus uteri; 9—urinary bladder; 10—symphysis pubis; 11—rectum; 12—sacrum; 13—vesicouterine pouch; 14—rectouterine pouch

All these ligaments form a kind of suspensory apparatus of the uterus which hangs in them as in a hammock.

An important role in maintaining the normal position of the uterus is also played by the *muscles of the pelvic floor*, which line the entire inferior strait of the pelvis. The integrity of the pelvic floor is a *sine qua non* for maintaining the normal position of the uterus. Descent of the vaginal and uterine walls and subsequently protrusion of the urinary

bladder and rectum into the vagina and, finally, descent and prolapse of the uterus are frequently the result of an impaired perineum and the muscles and fascia of the pelvic floor. Weakening of the pelvic floor leads to retroversion of the uterus. Perineal lacerations after childbirth lead to the same position of the uterus if they are not sutured in good time. Retroversion of the uterus not infrequently causes pain in the small of the back.

CIRCULATORY SYSTEM

The uterus is supplied with blood through *uterine arteries* which run in the parametric tissue on the right and left and reach the borders of the uterus on the level of the internal os uteri. At this point each uterine artery (right and left) bifurcates, one branch running in a spiral upward along the border of the corpus uteri—the uterine branch (Fig. 29), the other running downward along the cervix uteri—the cervical branch (Fig. 19). Veins bearing the same name run alongside the arteries, the blood flowing through them in the opposite direction. The uterine arteries issue from the hypogastric arteries, while the uterine veins drain into the hypogastric veins. An ovary receives blood from an *ovarian artery*. This artery springs from the abdominal aorta on approximately the same level as the renal arteries and descends into the minor pelvis to the ovary; in the ovary the artery gives off several individual branches, proceeds along the proper ligament of the ovary, reaches the fundus uteri and joins—anastomoses with—the branch of the uterine arteries, thus creating, as it were, a closed circulatory system. The ovar-

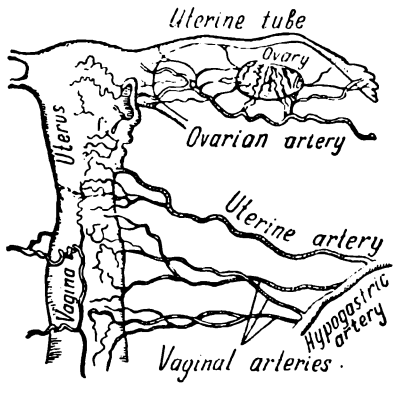


Fig. 29. Arterial blood supply to the internal female genitalia

ian artery is accompanied by an ovarian vein which drains into the inferior vena cava.

In addition to the aforesaid basic, largest blood vessels, many small and medium-sized blood vessels run through the pelvic cavity; these blood vessels supply the surrounding organs, as well as the tissues of the vagina and external genitalia.

The extensive circulatory network in the region of the minor pelvis increases during pregnancy, especially in the uterus (Fig. 52).

LYMPHATIC SYSTEM

The female sexual apparatus has an extraordinarily well developed network of lymphatic vessels and lymph nodes (Fig. 30). The system of lymph nodes of the female genitalia may be schematically represented in several stories.

The vessels through which the lymph flows away from the external genitalia run to the inguinal region, to the *inguinal* lymph nodes.

The vessels through which the lymph flows away from the upper parts of the vagina, the cervix uteri and lower part of the corpus uteri run into the parametric tissue, to the *iliac* and partly the *sacral* lymph nodes.

The lymph from the upper part of the corpus

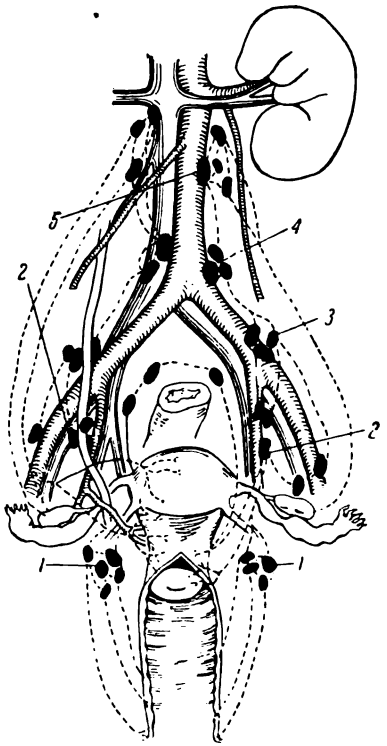


Fig. 30. Lymphatic system of the female genitalia. Lymph nodes arranged in separate groups

1—inguinal nodes; 2—iliac nodes; 3—hypogastric nodes; 4—lumbar nodes

uteri, the oviducts and ovaries accumulates in the *lumbar* lymph nodes.

The microbes gaining entrance into any part of the sexual apparatus may be transported with the lymph through the lymphatic vessels to the corresponding region of the lymph nodes where they are not infrequently retained; these *lymph* nodes form a sort of barrier which prevents the spread of infection. The metastases of cancer extend along the lymphatic vessels, first affecting the nearest lymph nodes. The various lymph nodes of the sexual apparatus are connected with each other, as well as with those of the adjacent organs, by anastomosed lymphatic vessels.

NERVOUS SYSTEM

The female internal genitalia are innervated partly by the sympathetic nervous system and partly by the spinal cord. The uterus and vagina receive nervous fibres from the *uterovaginal plexus*. The ovaries are innervated by the *ovarian plexus* formed mainly from the *aortic* and *renal plexuses*.

The external genitalia and the pelvic floor are innervated mainly by the *pudendal nerve* which springs from the sacral segments of the spinal cord. The most sensitive part of the uterus is the area corresponding to the internal os uteri where the largest number of nervous ganglia are grouped.

MAMMAE (BREASTS)

The milk secreting gland or mamma consists of several (15-20) glandules (lobules) each of which externally resembles a cluster of grapes. The efferent ducts of each lobule open to the exterior in the nipple (Fig. 31). When the mamma of a nursing mother is compressed the milk spurts out of the nipple in several thin jets.

In women who have reached sexual maturity the mammae begin to grow perceptibly and the fatty tissue surrounding the individual lobules of the glands develops amply.

The *nipple* is located in the middle of the breast. Owing to pigmentation the skin of the nipple is of a brownish

colour. The nipples differ both in size and shape. A nipple which sufficiently rises above the surface of the breast is considered normal. Flat or retracted nipples are also observed. Subsequently, during pregnancy, it is sometimes possible to eliminate this abnormality by stretching and massage.

Fig. 31. Female breast. Section shows individual lobules with the lactiferous ducts opening on the nipple

The growth of the mammae and the function of the ovaries are very closely interrelated. With the onset of sexual maturity, i.e., when the follicles mature and burst in the ovaries and menstruation appears, the breasts begin to develop quickly and perceptibly. They grow particularly during pregnancy.

OVARIAN-MENSTRUAL CYCLE

Of the very large number of original (primordial) follicles located in the cortical layer of the ovaries only very few (up to 400) reach complete maturity during the childbearing period of the woman's life; all the other follicles disintegrate during different stages of development.

A mature follicle includes an ovum, *granulosa cells* and follicular fluid; the latter contains a hormone which is called *folliculin*. The follicle is thus also a gland of internal secretion. One follicle matures every 4 weeks (Fig. 32). As the follicle develops it begins to protrude above the surface of the ovary. At some point at which the follicle protrudes the most the wall becomes particularly thin and under the sharply increased pressure within the follicle finally breaks. This process in known as *ovulation*.

The mature ovum which has emerged from the follicle and is capable of being fertilised is carried by the flow of the follicular fluid into the abdominal cavity whence it is moved

into the canal of the uterine tube partly by the flow of the fluid and partly by the vibrations of the fimbria.

The ova are much larger than any other cells of the human organism (Fig. 33). An ovum placed against a black background can be seen even with the naked eye.

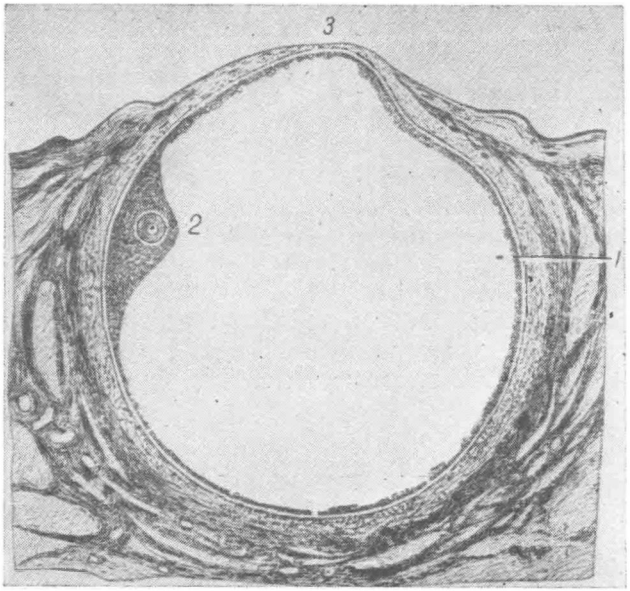


Fig. 32. Mature ovarian follicle before rupture

1—granulosa cells of the follicular epithelium; 2—primary follicle; 3—thinned ovarian epithelium—site of future rupture of the follicle

The ruptured follicle collapses and a new gland of internal secretion is formed in its place; owing to its yellow-red colouring this gland is called the *corpus luteum* (*yellow body*). The hormone of the corpus luteum is called *progesterone*. The subsequent development and role of the corpus luteum depend on what will happen to the discharged ovum. If the latter is fertilised along its way, the corpus luteum continues to develop and function, and in that case is called the *corpus luteum of pregnancy*. If the ovum is not fertilised,

menstruation takes place and the corpus luteum does not develop, in which case it is known as the *corpus luteum of menstruation*.

Within several weeks after menstruation the corpus luteum of menstruation disappears leaving a trace in the form of a small scar on the surface of the ovary.

After the regressive changes in the corpus luteum the next follicle begins to mature in the ovary, an ovum is discharged, a corpus luteum is formed and, if it is not fertilised, menstruation takes place.

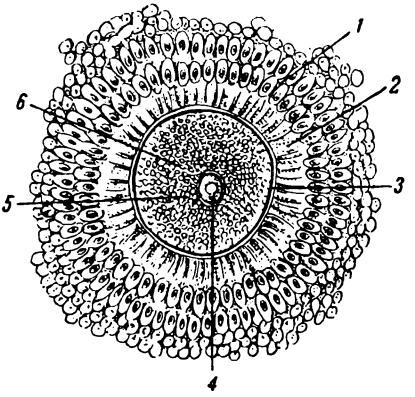


Fig. 33. Mature female ovum on emergence from the follicle

1—cells located on the periphery of the ovum form a so-called corona radiata; 2 and 3—hyaloid zone; 4—germinal vesicle; 5 and 6—protoplasm of the ovum

The menses appear between 13 and 15 years of age, but deviations in either direction, depending on many factors (climate, food, living conditions, etc.) are possible. The menses recur periodically, lasting on an average until the age of 45. Menstruation is not observed only during pregnancy and in about 50 per cent of the cases during nursing. Menstruations recur on an average every 3-4 weeks, or every lunar month, for which reason they are called monthlies or menses (mensis is the Latin word for month).

Usually ovulation precedes menstruation by 12-14 days, i. e., ovulation takes place approximately halfway between two menstruations.

Under the influence of the vital activity of the ovum and corpus luteum changes take place in the entire female organism, especially, in the uterus; as a result of these changes the viability of the ovum is preserved, nutrient materials accumulate in the uterus and the mucosa of the latter is loosened. The development of the follicle and corpus luteum, and the changes in the uterus and in the entire organism in

aggregate constitute the so-called *ovarian-menstrual cycle* which begins on the first day of one menstruation and continues to the first day of the next menstruation.

A discharge of mucus from the vagina is observed several days before menstruation. Menstruation lasts an average of 3-4 days and is usually more profuse during the first two days. During each normal menstruation a woman loses an average of 100 ml of blood. Menstrual blood differs from the ordinary blood which emerges, for example, from an incised vessel on a finger or other place in that it is darker and does not coagulate. If clots of blood are discharged during menstruation, they are to be regarded as a morbid phenomenon connected with certain deviations (incorrect position of the uterus, very long and narrow cervix uteri, affection of the uterus, or abnormal functioning of the ovaries).

Towards the beginning of menstruation the external genitalia fill with blood, the uterus enlarges and softens, the cervix uteri also somewhat softens and the ovaries swell up.

Shortly before menstruation the mammae swell up and the nipples become tense. During menstruation women not infrequently develop facial edema and sometimes a rash on the body.

The changes in the uterine mucosa are inseparably connected with ovulation.

After the bursting of the follicle, from the moment the corpus luteum has formed, i.e., 12-14 days before the forthcoming menstruation, an intensive flow of blood to the genitalia begins, the small blood vessels dilate and overfill with blood, and the mucosa of the uterus and the tubes becomes edematous. As a result of these changes the uterine mucosa thickens and instead of the usual 2-3 mm becomes 6-7 mm thick.

Moved partly by the vibrations of the tubal cilia and partly by the contractions of the tube the ovum is brought into the uterine cavity. If the ovum is fertilised along its way, conception takes place and the fertilised ovum reaches the uterine cavity and becomes imbedded in the uterine mucosa. Modified during the premenstrual period, the uterine mucosa, loosened, blood-rich and with a large reserve of nutrient materials, offers favourable conditions for the implantation and development of the fertilised ovum.

If pregnancy occurs, the next regular menstruation does not take place; if there is no conception, the modified uterine mucosa is disengaged and excreted together with the blood during menstruation. The cyclic functioning of the female genitalia is determined by the mutual influence of the hormones of the anterior lobe of the hypophysis and the ovaries. However, all of it is continuously regulated by the central nervous system.

CHAPTER IV

FEMININE HYGIENE DURING DIFFERENT PERIODS OF LIFE

Concern for human health must essentially begin at the moment of conception, during prenatal life (prenatal protection of the fetus). It has been established by numerous observations that the causes of some diseases which are manifested soon after birth and, not infrequently, late in life sometimes lie in certain abnormalities of fetal development.

The sanatory measures carried out in the Soviet Union—labour protection (and that of women in particular), improvement of housing conditions, rational nutrition, extensive development of physical culture and privileges granted to pregnant women—are aimed at preserving the health of the population; at the same time these measures favour better health of the offspring.

Several periods sharply differing from each other are distinguished during the woman's lifetime: the *period of childhood* which lasts from birth to the onset of sexual maturation (up to 13 years of age), the *period of sexual maturation* (13-18 years of age), the *period of sexual maturity* (beginning at 18-20 years of age), the *climacteric* (between 42 and 48 years of age), i.e., the period during which the menstruations and all phenomena connected with the ovarian-menstrual cycle gradually diminish, and the *menopause* when menstruations have ceased.

HYGIENE OF EARLY GIRLHOOD

A girl must be placed from the first day of life in an environment which may ensure her proper development. *Correct nursing of the baby* is particularly important. Each expec-

tant mother must be explained that breast-feeding is enormously important and that not a single nutrient mixture can fully replace the mother's milk.

In the interests of both mother and child the latter must be nursed during definite hours from the very beginning.

Incorrect breast-feeding, additional food given too soon and artificial feeding often result in improper development of the children, greater disease incidence and higher mortality. Correct breast-feeding and a rational diet of the nursing mother (p. 215) are important factors in preventing a number of diseases, including rickets.

The peculiarities in the structure of the newborn girl's external genitalia necessitate thorough care of the child. The vaginal entrance of newborn girls is dilated (unlike that of adult women who have not borne any children). The dilated vagina and the excessive looseness of its walls predispose to penetration and multiplication of bacteria. Gonorrheal infection is particularly dangerous. A girl is most frequently infected with gonorrhea because the elementary hygienic rules in the care of the child fail to be observed.

In view of the aforesaid it is necessary that the girl's genitalia should always be covered; an unwrapped child should never be put to bed with an adult and must always be kept only in its own bed. *A child must have its own bed, its own linens and its own bath. The child's linens must be washed apart from those of the adults*, preferably in a separate wash-tub and never in the bath-tub in which the child is bathed.

Besides gonorrheal infection, *trichomoniasis* (p. 281) or any other infection may be brought into the little girl's vagina because of negligent and unskilful care of the child's external genitalia. Subsequently, this may lead to adhesion of the vaginal walls and occlusion of the vulval entrance.

The little girl's external genitalia must be kept clean and be washed daily with lukewarn boiled water. The washing and drying movements must be made anteroposteriorly, towards the anus; if this rule is observed no intestinal bacteria or dirt can be brought into the vagina from the buttocks.

The girl's external genitalia must be dried with a special towel after each urination. The girl must under no circumstances be taught to do it with her shirt because this frequently leads to irritation of the external genitalia, on the one hand (appearance of an itch which makes the girl scratch the inflamed skin still more), while scratching leads to masturbation which develops into a disease difficult to cure, on the other hand.

The itching must be eliminated as soon as the slightest signs of it appear. For this purpose it is necessary to establish the cause of the itching—wiping the genitalia with the shirt, irritating discharge from the vagina or, what is frequently the case, helminths—and immediately to take suitable measures by prescription of the physician.

A mucosanguineous discharge from the genitalia, resembling menstruation, sometimes appears in newborn girls within 4-7 days after birth. This phenomenon requires no treatment. It is only necessary carefully to remove the dried blood from the external genitalia.

Sometimes the mammae are observed to swell and not infrequently to discharge a fluid resembling colostrum. The swelling usually disappears within a few days, but in some cases persists for about a month. The content of the glands does not have to be squeezed out; it is only necessary to observe cleanliness and carefully to wash the mammae because an inflammation which sometimes requires surgical intervention may develop if microbes gain entrance into them.

The room in which the child lives and the place where its bed stands must be the lightest and driest. Sunlight attenuates and kills pathogenic bacteria. The child must be taken outdoors more frequently both in summer and winter.

Very important to the child's health, in addition to correct nutrition and a good room, are fresh air, sunshine, physical exercise, care of the skin, light, clean and loosely fitting clothing and frequent changing of underwear and linens. All these sanitary factors favour development of a healthy child.

The subsequent development of the girl is greatly influenced by the infectious diseases from which she may have suffered in childhood. These diseases not only weaken the organism, but sometimes also affect the sexual apparatus by

causing considerable anatomical and functional changes in it. After diphtheria, scarlet fever or other acute infection suffered in childhood the girls not infrequently develop inflammatory changes in the vagina, uterus and tubes; sometimes the vaginal walls adhere and the vagina becomes occluded as a result. That is why prevention of children's infections, timely immunisation, treatment of the sick and proper care of the healthy girl also prevent gynecological diseases.

The wide network of child protection institutions—crèches, kindergartens, children's homes and infant health centres—is directly aimed at rearing a healthy generation and at teaching the mothers to take proper care of their children.

In these institutions which employ competent medical and pedagogical personnel the child develops normally, receives a proper education and acquires the necessary hygienic habits. The personnel of young children's institutions must also aim at improving the children's living conditions.

The rearing of children in a collective not only leads to a decrease in child mortality, but also properly guides from the very outset their physical and mental development.

During the first 5 years of life the various organs of the female sexual apparatus change but slightly. The growth of the entire system of sex organs is considerably accelerated in about the 7th year of life. The ovaries, oviducts and uterus begin to grow intensely, gradually lose their infantile appearance and approach the form characteristic of a sexually mature girl, i.e., the corpus uteri becomes longer than the cervix, the oviducts straighten out and the ovaries enlarge.

HYGIENE OF SCHOOL-AGE GIRLS

At the age of 7-13 years girls gradually grow sexually mature. At about 7-8 years of age the development of the secondary sexual characteristics begins, i. e., the typical female figure gradually develops, the girl's hips grow wider, the breasts enlarge, the shoulders become rounded and other changes are observed (Figs. 34-39).

The far-from-completed process of ossification in cases of improper care of the girl, incorrect feeding, and overstrain of the skeleton predispose to formation of spinal curva-

tures and improper development of the pelvis, which in the adult women may lead to labour complications.

At this age infectious and other diseases are not infrequently aggravated by diseases of the heart, kidneys and other

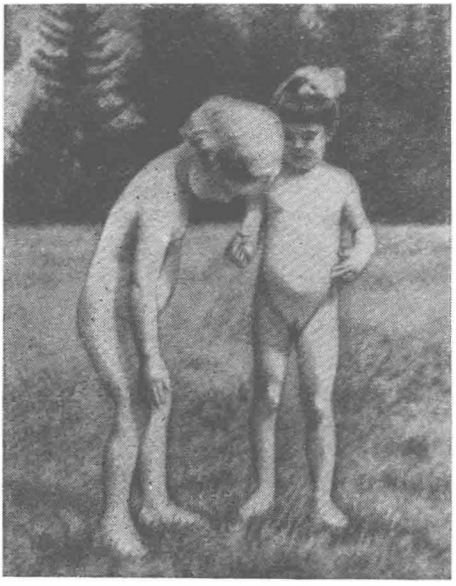


Fig. 34. Three-year-old boy and girl

organs, which lead to their functional insufficiency that persists all through life. Subsequently this circumstance very often complicates pregnancy and parturition.

Prevention of infectious diseases in childhood is particularly important for the subsequent development of a healthy woman. Among women suffering from infertility a relatively high percentage has suffered from infectious diseases (diphtheria, scarlet fever, etc.) in childhood; many of them have a permanently underdeveloped uterus.

At this age the diet of girls must not differ from that of boys. Girls must not be given too much meat because it accelerates sexual maturation and causes constipation. The girls' teeth and oral cavity must be carefully watched, their

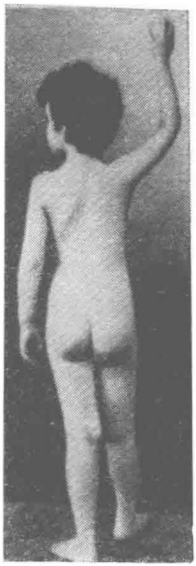


Fig. 35 a. Six-year-old boy

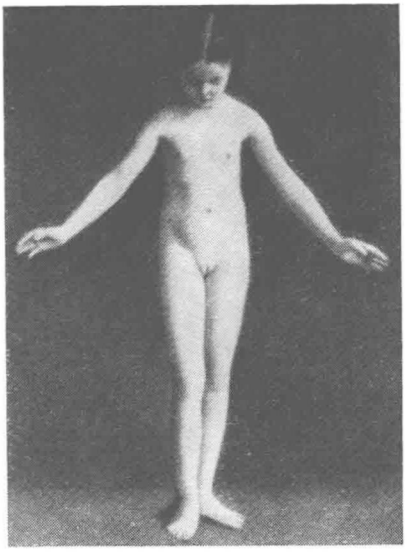


Fig. 35 b Six-year-old girl

Fig. 36 a. Seven-year-old boy

Fig. 36b. Seven-year-old girl

teeth must be brushed daily and the affected teeth treated in due time.

Girls must wear drawers to protect the genitalia against dust and dirt, and must change them at least twice a week.

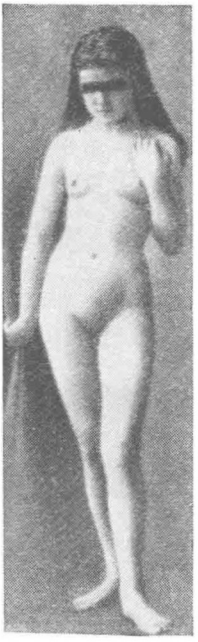


Fig. 37. Fourteen-year-old girl

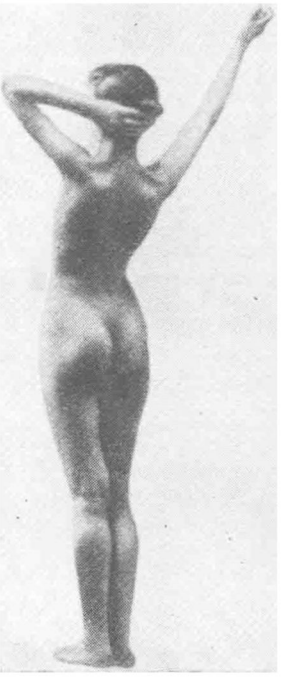


Fig. 38. Fifteen-and-a-half-year-old girl

The stockings must be fastened to the belt with garters. The footwear must fit loosely and have low heels.

Systematic rational exercise, swimming and other sports play a very important part; however, the girls must engage in them under strict medical control.

In talks with girls it is necessary to avoid everything that fixes their attention on sexual life too early. While describing the life of animals and plants, it is necessary grad-

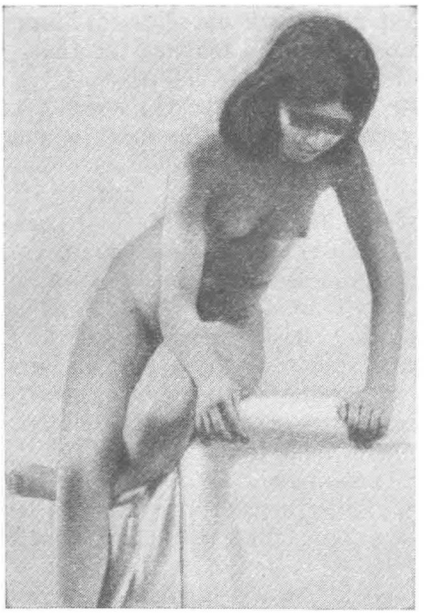


Fig. 39. Sixteen-and-a-half-year-old girl

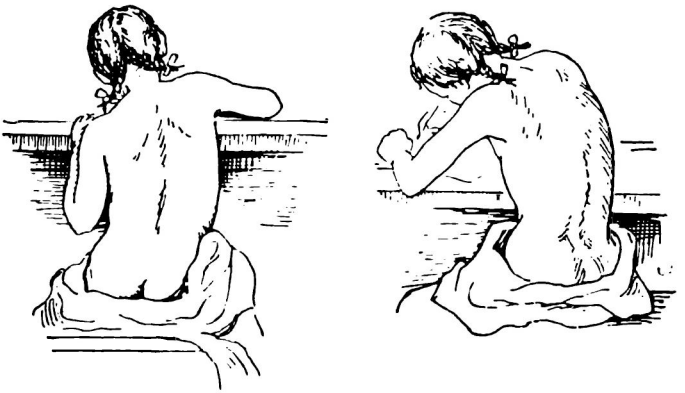


Fig. 40. Improper sitting posture at the desk leads to spinal curvatures

ually to acquaint girls with questions of human procreation. The Soviet school not only teaches the three R's, but also educates, on labour principles, healthy, active and conscious members of the socialist state. On coming to school girls must find a correspondingly favourable atmosphere. The teachers must understand the importance of school hygiene on which a good deal in the proper organisation of training depends. An exemplary sanitary state of the school impells the school children to observe cleanliness. It is very important that the classrooms should be light and airy; the desks at which the girls sit must be comfortable. The girls must be strictly watched that they sit correctly at the desks (Fig. 40) since an incorrect posture may result in curvatures of the spine. The school must devote considerable attention to physical culture, timely rest and nutrition. Medical workers and schoolteachers must jointly watch the development of girls and create favourable conditions for it; in doing this they must not confine themselves to the walls of the school, but must also extend their influence to the schoolgirls' homes.

The school age is, as was already mentioned, a transitional period during which little girls rapidly develop into adolescents (Figs. 37-39). During this period girls require a favourable environment and a particularly careful and considerate attitude on the part of those who surround them. The transitional period is characterised by the beginning of sexual maturation and ovulation followed by menstruation.

HYGIENE OF THE MENSTRUAL PERIOD

Menstruation is a normal function of the female organism; however, the changes taking place in the organism during the menstrual period necessitate special feminine hygiene.

Menstruation affects all the vital manifestations of the organism; during this period the organism of the girl, adolescent and adult woman is under great stress. During menstruation efficiency, attention and powers of perception decrease, and the resistance of the organism to infections diminishes.

The appearance of the first menstruation in a girl unprepared for it not infrequently frightens the girls so much that

subsequently every menstruation is accompanied by fear. The mother and the school physician must remember this and imperceptibly, in daily talks, gradually prepare the girl. The girl must also be told what the appearance of menstruation is connected with, how she should behave during this period and what hygienic measures this period requires. During menstruation the girl must be treated with particular consideration.

The menstrual blood must have a free outlet. By accumulating and drying on the external genitalia the blood soils them and forms bloody crusts.

During menstruation the external genitalia should be washed with warm boiled water at least twice a day. Before doing this it is necessary to wash the hands. No baths must be taken during menstruation. Industrial enterprises employing women have special personal hygiene rooms which may also be used during this period.

During menstruation it is necessary to use hygienic napkins made of several layers of clean gauze; the napkins are fastened to the belt and discarded as soon as they are soiled.

No spices (pepper, mustard) must be used during menstruation since they cause the blood to flow to the abdominal organs and may intensify the menstruation. It is important to watch the intestines in order that they function properly and to administer enemas in cases of constipation, although it is best to regulate the work of the intestines with a suitable diet.

Since the general resistance of the organism is somewhat decreased during the menstrual period, cooling of the body and contact with infectious patients must be avoided. Hard work or intensive studies are also undesirable during this period. Abrupt movements must likewise be avoided.

The "Law on Strengthening the Connections between the School and Life and on Further Developing the System of Public Education in the U.S.S.R." passed by the U.S.S.R. Supreme Soviet obligates medical workers to use every opportunity for carrying out extensive sanitary and hygienic measures in industry in connection with the employment of adolescent boys and girls.

In cases of normal menstruation girls and adolescents may carry on their usual work, observing the aforesaid rules

of hygiene at home, in school and at work. If menstruation is attended with pains, excessive loss of blood and other morbid phenomena, it denotes disease of the sexual organs. In such cases a medical specialist must be consulted to establish the causes of these symptoms and to prescribe suitable treatment.

In cases of normal menstruation the usual physical culture activities may be continued, except the events which require especially strenuous efforts.

All hygienic measures carried out during menstruation become still more necessary during inflammatory and other diseases of the sexual sphere. These diseases are frequently aggravated during menstruation.

HYGIENE OF MARRIAGE

Menstruation usually appears between 13 and 15 years of age. With the appearance of ovulation and menstruations the secondary sexual characteristics begin perceptibly to develop (see Figs. 37 and 38). The girl's genitalia also become modified, namely, the corpus uteri rapidly grows and becomes longer than the cervix; the total mass of the muscular tissue of the uterus also considerably increases.

However, despite the aforesaid changes in the organism of the girl the latter cannot as yet be considered completely formed and strong enough to live sexually, conceive and bear children without harming her health.

Early sexual life and, especially, early pregnancy, are unquestionably harmful. By imposing new and excessively great demands on the as yet weak and inadequately formed organism early pregnancy retards the girl's normal development. Early marriage is harmful not only for those who get married, but also for their offspring.

Extremely early marriage is most frequently also less stable since both young girls and very young men are not sufficiently scrupulous in choosing a spouse.

It should be noted that very late marriages likewise have their shortcomings. With age the tissues become less elastic. Elderly primiparas have a more difficult pregnancy and, especially, parturition; the latter is usually prolonged

and is dangerous to both mother and child. Old primiparas more frequently have to resort to surgical delivery and more often sustain lacerations of the soft tissues of the birth canal. Between twenty and twenty-five years of age is considered the most favourable period for the first pregnancy.

Sex plays a very important part in the life of woman, since it is connected with pregnancy, childbirth and nursing. Every girl must acquaint herself with the hygiene of sexual life and marriage to be clearly aware of the dangers resulting from the failure to observe the rules of hygiene and casual sexual relations.

On contemplating marriage each of the future spouses must be fully informed of each other's health.

The hymen ruptures and bleeds during the first sexual intercourse. Sometimes, especially in cases of indelicate sexual intercourse, the bleeding may be profuse and, in rare cases, to be sure, may even require medical aid. In cases of untidy external genitalia the ruptures of the hymen followed by bleeding may lead to infection and disease, for which reason a 3-5-day intermission must be made after the first sexual intercourse. Too frequent sexual relations undoubtedly tire both man and woman and have a pernicious effect on the nervous system. It will be observed that this effect is not infrequently felt much later. Sexual over-indulgence often leads to disorders of the sexual sphere (pains, hemorrhages).

It is undesirable for husband and wife to sleep in one bed.

HYGIENE OF THE CLIMACTERIC

The climacteric is the transitional period in the woman's life during which the regular maturation of follicles in the ovaries and the menses gradually cease, and the woman becomes incapable of bearing children; at the same time the vital activities of all endocrine glands are disturbed, and changes in the entire female organism take place.

The period of maximal activity of the whole female organism which precedes the climacteric, the so-called childbearing period, lasts on an average to 42-45 years of age, after which a gradual wasting away begins. The time of the

climacteric may greatly vary, the latter taking place approximately between 42 and 48 years of age. Here the same factors come into play as in sexual maturation of the female, namely, working and living conditions, climate, diet and the character of the child-bearing period (parturition, postpartum diseases, abortions).

Usually the menses do not discontinue at once. The ovulations and menstruations cease to be strictly periodic, the menses appearing after greater and irregular intervals. Sometimes such irregular menses are attended with much greater loss of blood and a number of unpleasant sensations.

The transitional period may last 1-2 years and longer. To be sure, this is not always the case, because sometimes this period is much shorter. In some cases the ovaries cease to function at once, the menses also ceasing at once and forever, i.e., the *menopause* takes place.

Cessation of ovarian functions is attended with a gradual atrophy (shrivelling) of the genitalia.

The subcutaneous fatty tissue disappears from the external genitalia, the hair on them thins out and turns grey, the vaginal walls smooth out, become dry and in some places devoid of epithelium. The uterus becomes much smaller and lighter (*senile uterus*), the uterine mucosa is deprived of the ciliated epithelium, while connective tissue increasingly grows in the muscular layer. Similar changes are also observed in the tubes. The ovaries considerably shrivel; at first all maturing follicles and then the primordial follicles also gradually disappear from the cortical layer of the ovaries; the medullary layer of the ovaries shrinks and its vessels become obliterated.

In addition to this, owing to cessation of ovarian activity, the women develop so-called *phenomena of disintegration*, i.e., flushes and high fever followed by chills and cold sweat, dyspnea, sometimes headaches, buzzing in the ears, tachycardia and certain other morbid phenomena of a neurovascular character. All this continues until the female organism regains its equilibrium disturbed by the cessation of ovarian activity. The phenomena of disintegration are in some measure observed in most women and usually soon pass. Sometimes, however, these phenomena progress, the flushes recur day and night and not infrequently weaken the woman

so much that she becomes incapacitated and needs special treatment.

During this period the metabolism in women also changes and is manifested in intensive deposition of fat, possible development of diabetes mellitus and itching in the region of the external genitalia; the latter is sometimes due to irritation of the skin with urine.

Hygiene of the transitional period plays an important part in preventing and treating the phenomena of disintegration. It is necessary to mitigate all the morbid phenomena by a suitable regimen, including more exercise and fresh air and curtailing consumption of meat. Showers and sponging with cold water are very beneficial during this period. Easier work is desirable.

In cases of marked phenomena of disintegration suitable treatment is recommended. Properly administered hormone therapy produces a favourable effect.

The female organism gradually adapts itself to the new conditions and the so-called senile period—the menopause—takes place. But even during this period the vital activities of the ovaries do not, apparently, cease completely.

It is very important to remember that cancer of the uterus develops most frequently during the climacteric. The basic method of controlling this grave disease is its early identification and a timely operation.

Any menstrual irregularity, any appearance of blood after a rather long absence of menstruation should impel the woman immediately to consult a physician. The nurse must always be aware of this and in cases of hemorrhages must immediately refer the women to a physician and under no circumstances attempt to administer any treatment herself. In general, every woman during the transitional period and in old age must consult a physician every 4-6 months.

The main methods of controlling cancer consists in extensive cultural and educational work among women, popularisation of knowledge of cancer among the population, early diagnosis of malignant neoplasms in the genitalia, which is usually attained by prophylactic examinations of all women past 30 years of age, and timely surgical aid. In this important and difficult but honourable work the nurse plays a very important part.

CHAPTER V

PREGNANCY (GRAVIDITAS)

CONCEPTION

The beginning of sexual life starts a new stage which is characterised by a possibility of pregnancy and changes in the entire female organism connected with pregnancy.

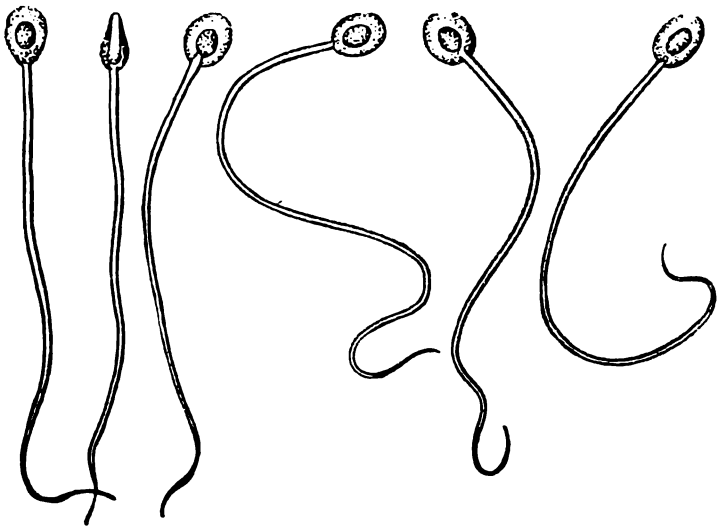


Fig. 41. Spermatozoa

During each sexual intercourse about 3 ml of semen is discharged into the vagina; the semen is a light-coloured thick fluid which contains the spermatozoa (Fig. 41). During coitus the spermatozoa penetrate mainly into the

posterior fornix of the vagina and partly into the cervix uteri. Of the enormous number (up to 200 million) of spermatozoa contained in the semen one penetrates into the ovum which was discharged from the follicle during ovulation and fertilises it. All the other spermatozoa are destroyed.

The head of the spermatozoon pierces the membrane of the ovum and the spermatozoon enters the protoplasm, its tail dissolving in the protoplasm; the head of the spermotozoon approaches the nucleus of the ovum, merges with it and *fertilisation* results. From this moment the entire period during which the fertilised ovum develops in the female organism is called *pregnancy*.

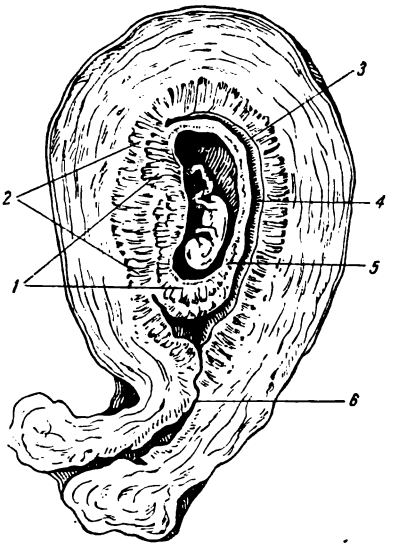


Fig. 42. Uterine cavity with 2-months-old embryo (three-fourths of the natural size)
1—*chorion frondosum*; 2—part of the decidua where the placenta develops; 3—decidua; 4—*chorion laeve*; 5—embryo; 6—internal os uteri

Fertilisation usually takes place in a uterine tube. The fertilised ovum is incapable of moving by itself; it is moved along the tube by the vibrations of the epithelial cilia of the tube and the peristalsis of its walls. By the time the ovum gains entrance into the uterine cavity the uterine mucosa is in a state of premenstrual swelling the ovum *implants* itself in this loose thickened membrane (Fig. 42) which at this time is known as the *decidua*.

If the fertilised ovum stops somewhere in the tube or, which happens very rarely, in the abdominal cavity, it may also become implanted and begin to develop there; such pregnancy is called *extrauterine*.

Extrauterine pregnancy is possible as a result of underdevelopment of the uterine tubes which in such cases have

very many curves that hinder and impede the movement of the fertilised ovum to the uterus. Extrauterine, tubal pregnancy may develop as a result of inflammatory changes in the mucosa and muscular wall of the tube. In these cases the mucosa does not have efficient ciliated epithelium, the vibrations of whose cilia move the ovum in the direction of

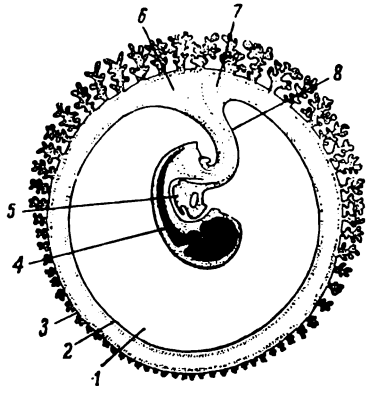


Fig. 43. Embryo

1—amniotic fluid in which the fetus "floats"; 2—amnion; 3—chorion; *chorion frondosum* (from which the placenta develops) on top and *chorion laeve* on the bottom; 4 and 5—embryo; 6 and 7—future blood vessels of the umbilical cord; 8—umbilical cord being formed

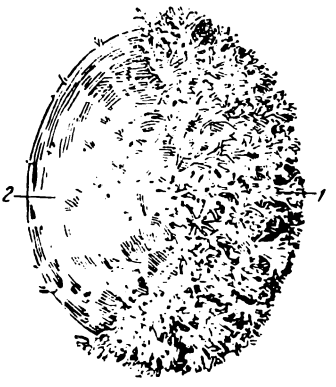


Fig. 44. Fetus in the third lunar month of pregnancy. Part of the fetal surface (1) is covered with villi—the *chorion frondosum*, the other part (2) of the surface is smooth—*chorion laeve*

the uterus, and the changes in the muscular layer impair the peristalsis of the tube. The inflammatory changes in the tubes are most frequently caused by abortions, gonorrhea and intrauterine injections of iodine and other substances aimed at preventing pregnancy.

DEVELOPMENT OF THE FETUS

The fertilised ovum which has gained entrance into the uterine cavity is covered with a layer of special cells—*trophoblast*—which subsequently gives rise to the *chorion*, the villiferous membrane of the ovum (Fig. 43). The ovum set-

tles (implants itself) in the uterine mucosa and sinks in it owing to the dissolving action of the trophoblast cells. Part of the trophoblast which sinks in the uterine mucosa develops into the so-called *chorion frondosum*; the remaining chorion along the periphery of the ovum, on the contrary, atrophies and becomes smooth for which reason it is called the *chorion laeve* (Fig. 44).

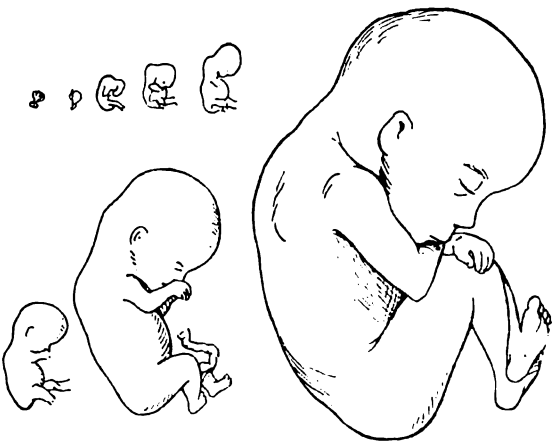


Fig. 45. Fetus during different stages of pregnancy—from two weeks to four months

During early periods of pregnancy the fetus does not as yet fill the entire uterine cavity and part of the latter remains free (Fig. 42); as the fetus grows, it takes up more and more room and by the end of the third lunar month of pregnancy fills the entire cavity of the uterus which by that time has considerably enlarged. At the part of the uterine mucosa where, as was already mentioned, the ovum was implanted and the *chorion frondosum* sank into the decidua, a special organ called the *afterbirth* or *placenta* gradually develops towards the beginning of the third month of pregnancy. Through the placenta the fetus is supplied with nutrient materials from the maternal blood, the fetal metabolites which have to be eliminated entering the maternal blood

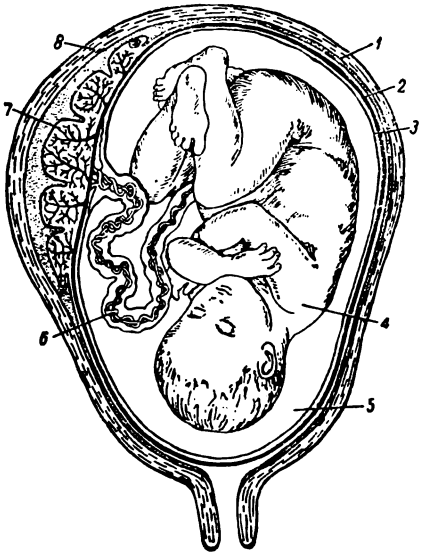


Fig. 46. Fetus in the uterus at the end of pregnancy (diagram)

1—decidua; 2—chorion; 3—amnion; 4—fetus; 5—amniotic fluid; 6—umbilical cord; 7—placenta; 8—uterine wall

through the placenta. Besides, hormones similar to folliculin and progesterone produced by the ovaries are secreted into the organism of the pregnant woman from the placenta. These hormones favour continuation of pregnancy and before childbirth—the development of labour.

Inside the chorion there is one more membrane of the fetus—the *bag of waters* or *amnion*; this membrane forms a sort of sac which is filled with amniotic fluid (waters) in which the fetus connected with the placenta through the umbilicus floats freely (Fig. 46).

As pregnancy progresses, the size of the fetus (Fig. 45) and afterbirth, as well as the amount of amniotic fluid, also increase.

With the growth of the fetus the correlation between the size of its head and the rest of the body changes particularly noticeably; thus, in a 2-months-old fetus the head is of about the same size as the rest of the body, in a 5-months-old fetus the head already constitutes only one-third of the remaining part of the body, and in the 10-months-old fetus—only one-fourth of the entire length of the body.

With progress of pregnancy the weight of the fetus increases, the increase varying considerably from month to month.

At the end of the third month of pregnancy the fetus weighs 20 g and its fingers and toes are clearly discerned.

At the end of the fourth month the fetus weighs 120 g; at this time its sex is clearly distinguished, active movements of the limbs ap-

pear and *meconium* (the original feces) begins to accumulate in the intestines.

At the end of the fifth month the fetus is 25-27 cm long and weighs an average of 300 g; hair appears on the head and a fuzz over the whole body; the sebaceous glands begin to function and subcutaneous fat is deposited.

At the end of the sixth month the fetus is 30-32 cm long and weighs between 600 and 700 g; at this period the fetus is born alive, but soon dies.

At the end of the seventh month the fetus is 35-36 cm long and weighs 1,000-1,200 g; its skin is wrinkled and covered with a caseous lubricant. Children born at this time are not very viable, but with particularly thorough care and in a suitable environment such children may be nursed to maturity.

At the end of the eighth month the fetus is 40 cm long and weighs up to 1,500 g; born at this period the fetus may be carefully nursed to maturity.

At the end of the ninth month the fetus is 45 cm long, weighs up to 2,500 g and has a smooth skin. Children born at this time are viable and with good care develop well.

Towards the tenth month the fetus reaches complete maturity; it is 49-50 cm long, weighs 3,200-3,300 g, and its head constitutes one-fourth of the total length of the body.

Repeated births usually produce larger children.

In determining the maturity of the newborn it is always necessary to take into consideration not only its length, (height) and weight, but also a number of other characteristics showing its maturity, including the duration of pregnancy.

The characteristics of fetal maturity are as follows: the subcutaneous fat is sufficiently developed, the skin is pink, the fuzz persists only on the skin of the shoulder girdle, upper parts of the back and shoulders; the hair on the head is 1.5-2 cm long; the cartilages of the helices and nose are dense, the nails are hard and reach beyond the tips of the fingers, and the umbilical ring is located midway between the symphysis pubis and the xiphoid process or somewhat lower. In boys the testes have descended into the scrotum, and in girls the clitoris and labia minora are covered by the labia majora. A mature fetus displays considerable activity—moves its limbs and cries.

For a rapid determination of the approximate age of the fetus the following scheme may be used:

Scheme of the Length of the Fetus According to the Period of Pregnancy (in Lunar Months)

First month	$1 \times 1 =$	1 cm
Second „	$2 \times 2 =$	4 „
Third „	$3 \times 3 =$	9 „
Fourth „	$4 \times 4 =$	16 „
Fifth „	$5 \times 5 =$	25 „
Sixth „	$6 \times 5 =$	30 „
Seventh „	$7 \times 5 =$	35 „
Eighth „	$8 \times 5 =$	40 „
Ninth „	$9 \times 5 =$	45 „
Tenth „	$10 \times 5 =$	50 „

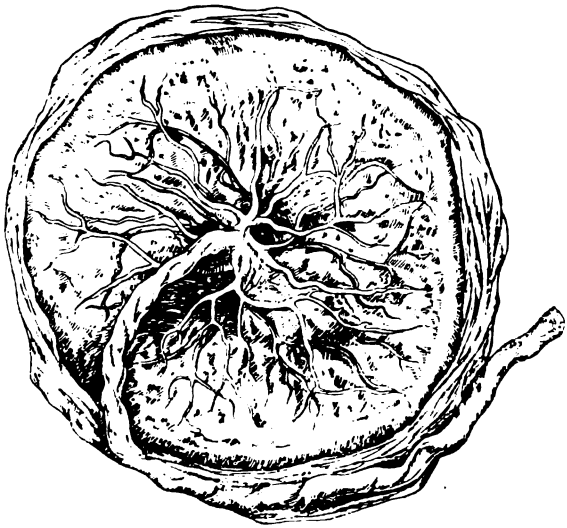


Fig. 47. Placenta, fetal aspect, showing blood vessels and point of attachment of the umbilical cord

PLACENTA

The placenta appears like a disk (Fig. 47) which by the end of pregnancy is about 16×20 cm in size. In the centre the placenta is 3 cm thick; along the borders it is somewhat

thinner. At full term the placenta weighs about 500 g. It consists of 15-20 *lobules* or *cotyledons*. Usually each lobule is a greatly developed villus grown into the decidua; a closed system of blood vessels runs inside the villus through all its branches (Fig. 49).

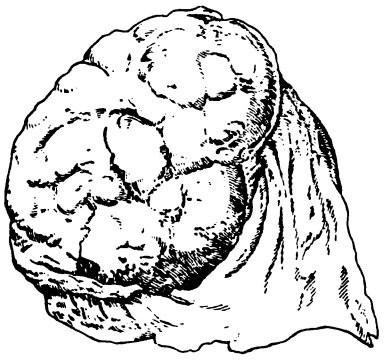


Fig. 48. Placenta, maternal aspect, showing placental lobules

Two surfaces—the internal and external—are distinguished in the placenta. The internal or *fetal surface* of the placenta faces the cavity of the embryo, the fetus, and is covered with the amnion.

The umbilical cord from the root of which blood vessels run radially is attached to the internal surface of the placenta (Fig. 47); the external or *maternal surface* of the placenta adjoins the uterine wall and is divided by deep furrows into the aforesaid lobules or cotyledons (Fig. 48).

During "dissolution" of the decidual cells the walls of the small uterine blood vessels running through the decidua also dissolve, the blood effuses between the villi into the so-called intervillous spaces and the villi seem to be bathed in this blood (Fig. 49).

From the maternal blood circulating in the intervillous spaces liquid and gaseous nutrient substances penetrate through the walls of the villi into their blood vessels; the blood runs through the villous vessels to the umbilical vein and thence to the fetus. The fetal metabolites which circulate around the villi enter the maternal blood also through the villous vessels.

If the villi are normal, the entire process operates in the aforesaid manner; *nowhere in the villi*, as also nowhere in the normal placenta, is the *maternal blood directly mixed with the blood of the fetus*. Only in cases of placental disease, when the integrity of a villus is violated and the wall of a blood vessel running through it is ruptured does the maternal blood mix with the blood of the fetus; in these cases the bacteria and other substances circulating in the maternal blood may gain entrance into the blood of the fetus. This happens for example, in cases of untreated syphilis of the mother: the spirochetes destroy the villus and penetrate to the fetus infecting the latter with syphilis.

UMBILICAL CORD

The umbilical cord which is as long as the fetus (about 50 cm) and is 1.5 cm in diameter runs from the fetus to the placenta. Sometimes the umbilical cord is longer and sometimes shorter. Inside the umbilical cord there are three blood vessels—two arteries and one vein; the vein conveys arterial blood from the placenta to the fetus, while venous blood flows through the arteries from the fetus to the placenta. The remaining mass of the umbilical cord consists of embryonic connective tissue which is known as *Wharton's jelly*. On the outside the umbilical cord is covered with the amnion.

FETAL MEMBRANES

As the fetus enlarges the *chorion laeve* approaches the walls of the uterine cavity and closely contacts the parietal decidua; inside the chorion there is another bag formed by the *amnion* which is filled with the amniotic fluid. The placenta together with the membranes and the umbilical cord is also called the *afterbirth*.

AMNIOTIC FLUID

The amniotic cavity is filled with amniotic fluid which is transparent and has particles of embryonic lubricant and bits of fluff separating from its skin floating in it. During pregnancy the amniotic fluid protects the fetus from external injury, while the amnion prevents infection from gaining entrance to the fetus from the vagina. During parturition the amniotic sac helps to dilate the cervix uteri.

Normally there is 1 litre of amniotic fluid towards the end of pregnancy. If there is 1.5 litres of amniotic fluid or more, it is called polyhydramnios; contrariwise, if there is much less amniotic fluid than normal, it is known as oligohydramnios.

FETAL BLOOD CIRCULATION

The blood circulation of the fetus differs from that of the born child.

By carefully examining the diagram of fetal blood circulation (Fig. 50) we observe that there is pure arterial blood only in the um-

bilical vein, its branches running to the liver and to the inferior vena cava (*ductus venosus*). Besides this there is only mixed blood with a prevalence of arterial blood (inferior vena cava and ascending branch of the aorta), mixed blood with a prevalence of venous blood (descending branch of the *aorta*) and, lastly, venous blood (superior vena cava, pulmonary arteries and Botallo's duct).

The foregoing distribution of arterial and mixed blood in some measure explains the uneven development of the various parts of the fetus at different periods of pregnancy. The upper part of the fetus, which is better supplied with arterial blood, develops mainly during the first half of pregnancy. The lungs of the fetus receive a very insignificant amount of blood and therefore develop slowly; the liver is best supplied with arterial blood and therefore develops more rapidly. The lower part of the body and lower limbs of the fetus receive a poorer blood supply during the first half of pregnancy. During the second half of pregnancy when the foramen ovale becomes constricted the arterial blood is distributed more evenly throughout the fetus, and the lower half of its body develops more rapidly.

At the moment the child is born the fetoplacental blood circulation ceases; this gives rise to oxygen want which leads to stimulation of the newborn child's respiratory centre. The result of this stimulation is the newborn child's first inhalation. During the inhalation air gains entrance into the lungs which until then were collapsed, the pulmonary alveoli expand and the blood vessels (capillaries) running through them dilate; the dilated capillaries aspirate a large amount of blood, owing to which the distribution of blood in the newborn organism is at once altered. As soon as pulmonary respiration is established, blood ceases to circulate through Botallo's duct, the latter collapses, the blood ceases to circulate through the umbilical vessels and the ductus venosus, which become obliterated, the foramen ovale closes, the left atrium completely separates from the right atrium, and pulmonary circulation in the newborn is established (Fig. 51).

CHANGES IN THE FEMALE ORGANISM CONNECTED WITH PREGNANCY

From the moment of fertilisation and all through pregnancy very complex changes which favour normal development of the fetus take place in the female organism.

These changes are most noticeable in the *genitalia*, the uterus in particular. At first the walls of the *uterus* grow much thicker owing to the increase in the number of muscle fibres and their development; subsequently, approximately from the end of the first half of pregnancy, the uterus enlarges mainly because of the distention of its walls by the fetus growing in its cavity.

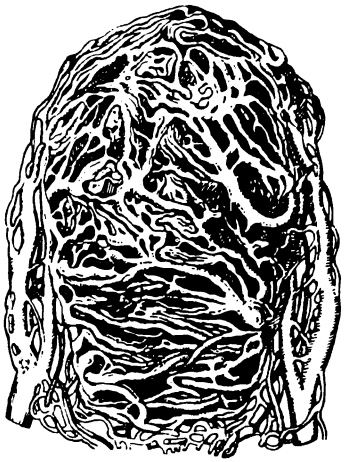


Fig. 52. Vascular system of the gravid uterus

The uterine walls become thinner. The uterus weighing 50 g in its non-gravid state weighs 1,000 g (without the fetus) towards the end of pregnancy, i.e., it becomes 20 times as heavy. The capacity of the uterine cavity increases 500-fold towards the end of pregnancy.

At the same time the vascular system of the uterus expands and the uterus is more richly supplied with blood (Fig. 52).

During pregnancy the *uterine tubes* grow somewhat thicker and longer.

The *ovaries* enlarge during pregnancy but slightly. One of the ovaries contains a growing corpus luteum which is 1 cm in diameter; the corpus luteum continues to exist during the first half of pregnancy and then gradually disappears, leaving a dense white scar in its place.

As pregnancy progresses, the walls of the *vagina* become cyanotic owing to intensive filling with blood and slower outflow of the blood. This cyanosis increases with each passing month, and by the end of pregnancy the epithelium of the vaginal walls acquires a blue-violet colouring. This colouring of the vaginal mucosa from the very first weeks of pregnancy is one of the accessory signs for diagnosing pregnancy.

The growing uterus presses against the adjacent organs. During the first months of pregnancy this pressure affects the urinary bladder, causing more frequent urges to urinate; this symptom is observed in pregnant women quite often and warrants its inclusion in the number of probable signs of pregnancy. At the end of pregnancy, when the head of the fetus has descended low, the urinary bladder symptoms become more clearly pronounced; in addition to the frequent urges to urinate, incontinence of urine is sometimes observed

in the pregnant women during coughing, sneezing, etc.

The rectum located in the rear of the uterus is also somewhat compressed; this leads to constipation of which the pregnant women so often complain. However, a certain intestinal sluggishness is generally observed during pregnancy; this may also lead to constipation.

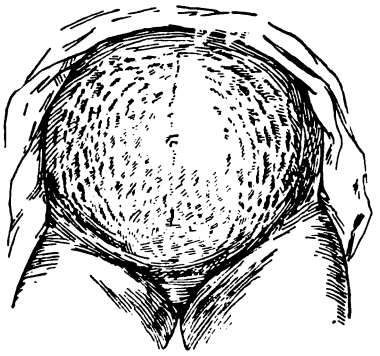


Fig. 53. Pregnancy scars on the abdomen

Owing to congestive phenomena in the minor pelvis, on the one hand, and compression of large blood vessels of the minor pelvis by the uterus, on the other hand, edema of the legs and dilated veins are observed in some women. Sometimes changes occur in the venous walls, as a result of which varicosities are formed, the walls of the blood vessels become more permeable, which fosters the appearance of edema. The edema observed in pregnant women towards the end of the day usually disappears after rest.

The enlarging uterus enters the abdominal cavity and begins to distend the abdominal walls. If the muscles of the latter are insufficiently elastic, they partly divaricate. In addition to this, fibres of the deep layers of the skin are also frequently observed to separate; the fresh points of divarication are coloured bluish-red and subsequently acquire a white lustre; these are so-called *scars of pregnancy* (Fig. 53). These scars may sometimes also be observed on the skin of the thighs and breasts. In women who systematically engage in physical exercise the aforesaid scars are observed infrequently. Pregnant women with very flabby muscles sometimes have considerable divarication of the abdominis rectis muscles. To prevent this occurrence, the pregnant woman, in addition to systematic physical exercise, must wear a binder, and if this is impossible, tie a towel around the abdomen from the 5th or 6th month of pregnancy (Fig. 75).

Besides the aforementioned changes, a noticeable darkening of the linea alba is observed between the symphysis pubis and the navel, and during later periods of pregnancy—also above the navel; this brown *pigmentation* is particularly pronounced in brunettes.

The pigmentation is also observed on and around the nipples, and in the form of brown spots on the breasts and face; the spots on the face are called *chloasma gravidarum*. This pigmentation is ascribed to the intense activity of the adrenal cortex.

Changes in the *breasts* are observed from the moment of conception. During the first months of pregnancy the mammae swell up and become tense; sometimes the pregnant woman feels a light pricking sensation in them, colostrum appears in the glands, and it is even possible to squeeze out several drops of it. All these changes in the breasts, including the pigmentation of the nipples and the appearance of small elevations, so-called *additional glandules*, around them are in their aggregate one of the accessory diagnostic signs of early pregnancy.

The bones and joints of the pregnant woman also suffer some changes. In cases of irrational nutrition before pregnancy and, especially, during pregnancy, the bones lose some of their calcium salts. The ligaments swell up considerably, thereby increasing, very insignificantly to be sure, the mobility of the joints.

The changes in the *nervous system* during pregnancy have not been sufficiently studied as yet. Sleepiness, increased irritability and greater psychic vulnerability are noted during pregnancy, for which reason the pregnant woman requires a particularly careful and considerate approach on the part of those who surround her, especially the medical workers.

Considerable changes are also observed in the functions of the *endocrine glands* which are closely interconnected; a change in the functions of one of these glands involves changes in the functions of the other glands. During pregnancy, as was mentioned above, ovulation ceases and a corpus luteum is formed; by the third month of pregnancy the placenta forms and begins to function in the uterus; the placenta also has properties of an endocrine gland. All this causes a

number of changes in the other endocrine glands. Thus the thyroid gland is not infrequently observed to enlarge in the pregnant woman, and, if the gland was enlarged before, as, for example, in cases of Basedow's disease, it enlarges still more during pregnancy. The thickening of the nose and lips sometimes observed in pregnant women is ascribed to intensified functioning of the hypophysis, whereas the aforementioned pigmentation of the linea alba and the nipples is attributed to intensified functioning of the adrenals.

The *metabolism* of the woman undergoes considerable changes during pregnancy; this stands to reason, if we consider the enormous work the female organism has to do during this period. The necessity of assimilating a large amount of nutrient substances, expended on the rapid growth of the fetus, and of detoxicating and excreting the fetal metabolites undoubtedly affect the metabolism of the pregnant woman.

An accumulation of protein substances in the female organism is observed during the second half of pregnancy. A considerable part of these substances is used for building the organs and tissues of the fetus which grows very rapidly during this period; the rest of the protein substances is expended on the growth of the uterus and the mammae.

Glycogen is abundantly deposited in the liver, placenta and embryo of the pregnant woman. A plentiful deposition of *fatty substances* is observed in the cells of the adrenals, placenta and mammae.

Mineral salts are required for building the skeleton of the fetus. The most important of these are the salts of calcium (lime), sodium (common salt), potassium, magnesium, iron and phosphoric acid.

The fetus receives *oxygen* from the maternal blood and excretes carbon dioxide, for which reason the organism of the pregnant woman needs more oxygen. An insufficient supply of oxygen to the woman's organism endangers the life of the fetus.

Retention of water in the tissues is noted during pregnancy, especially, towards its end; this is connected mainly with the retention and superfluous accumulation of salts, which leads to development of edema (p. 240). Pregnant women tending to develop edema must be particularly carefully watched and their consumption of chlorides must be curtailed.

The growth and development of the fetus require a lot of vitamins which the fetus essentially receives from the maternal organism through the placenta.

As was already mentioned, the metabolism of pregnant women considerably intensifies, for which reason it has to be regulated; this requires fresh air, a suitable work and rest regimen, favourable surroundings and a rational diet (p. 118).

With the onset of pregnancy most women develop *nausea* and sometimes vomiting; in some cases *salivation* is observed. These phenomena usually begin in the second month and, with a proper regimen and diet, cease by the end of the first half of pregnancy.

In individual cases the aforesaid phenomena begin even earlier, may continue longer and require proper treatment. During pregnancy perverted tastes are sometimes observed; some pregnant women yearn for herring, sour crout, pickles and, in very rare cases, for inedible things, for example, coal and chalk.

The pregnant woman gains weight mainly during the second half of pregnancy, the average gain during the entire pregnancy amounting to 10-11 kg. During the last months of pregnancy the increase in weight must not exceed 300-400 g per week; an increase in excess of this figure denotes an abnormal course of pregnancy and retention of fluid in the tissues; this requires suitable treatment. In such cases pregnant women must be hospitalised in good time.

During pregnancy the *arterial pressure* somewhat increases. Normally a nonpregnant woman has a maximal pressure of 110-115 mm Hg. During the second half of pregnancy the arterial pressure increases 10-20 mm and reaches an average of 130 mm in the last month of pregnancy. The elevation of arterial pressure is connected partly with the increase in the total volume of blood during pregnancy.

Higher maximal arterial pressure (140 mm and higher) is an unfavourable sign, especially, if it keeps rising, which is shown by repeated measurements after short intervals of time (several days). As soon as elevated arterial pressure is discovered in the pregnant woman, the latter must immediately be placed under special medical observation and a strict regimen must be established for her. Such women are usually placed in good time in the ward for pregnant women of a maternity home. It should be remembered that pregnant women with rising arterial pressure are in danger of grave complications during pregnancy and parturition which are accompanied by convulsive attacks (eclampsia).

It is therefore clear why all pregnant women are weighed and their arterial pressure is measured during every visit to the maternity health centre and why the arterial pres-

sure is repeatedly measured within certain intervals of time in cases of hypertension.

It is also very important to *analyse* the pregnant women's *urine*. Pregnant women excrete more urine than normally; besides, traces of albumin are found in the urine of even healthy pregnant women. It is necessary very carefully to watch the increase in the albumin content of the urine, as well as the total amount of protein, simultaneously taking into consideration the woman's general condition, namely, *the presence of edema, increase in weight and rise in arterial pressure*. If the content of albumin in the urine increases, the physician watches the condition of this pregnant woman particularly carefully. The woman is prescribed a dairy diet and her urine is analysed at least once a week.

The urine is usually taken as follows: the pregnant woman's external genitalia are washed with boiled water and wiped with sterile gauze, after which the vaginal entrance is closed with a piece of sterile cotton in order that no vaginal discharges may gain entrance into the urine; the woman is asked to urinate into a clean bedpan or some glass vessel, following which 8-10 ml of the urine is poured through a clean glass funnel into a test tube. It is best to take urine for an analysis by means of a catheter, but this is done only on the physician's prescription with strict observance of all rules of asepsis. The urine thus obtained is sent to a laboratory for analysis. If the presence of albumin in the urine has to be quickly determined, the following tests may be used:

1. *Reaction of Albumin to Sulfosalicylic Acid* (20 per cent). From 10 to 20 drops of a 20 per cent water solution of sulfosalicylic acid are added to a test tube containing 8-10 ml of filtered (passed through filter paper) urine. If albumin is present, the urine becomes turbid. For comparison, the urine of the same woman is poured into another test tube without adding sulfosalicylic acid.

2. *Reaction of Albumin to Acetic Acid.* Four or five ml of filtered urine is boiled on a spirit burner. The presence of a large amount of albumin makes the urine turbid. Since the turbidity may be due to the presence of a large amount of salts in the urine, several drops of 5-10 per cent acetic acid are added after boiling. Failure of the sediment to dissolve when this is done shows that the urine contains protein.

These methods of analysis, quite accessible to the nurse, make it possible to discover the presence of albumin in the urine, although it is impossible thus to determine its amount. Consequently, if traces of albumin are found in the urine of a woman, the latter must be given special attention and her urine must be immediately analysed in detail in the nearest

laboratory or hospital in order to determine the amount of albumin and the presence of other pathological elements (sugar, staining pigments, renal elements, blood cells and bacteria). The nurse can thus detect the affection of the pregnant woman at the very outset and refer her to a physician in good time, which, in the overwhelming majority of cases, may prevent grave consequences.

As was already mentioned, during pregnancy not only the genitalia, but also the entire organism of woman function more intensely. Most women feel good during pregnancy and continue their habitual work. But there are also women (to be sure, they are considerably outnumbered) for whom pregnancy is a great strain from the very beginning. Everything depends on the pregnant woman's health, the efficiency of her organs and the degree of their adaptability to the changes caused by pregnancy.

Owing to the extensive sanitary measures carried out in the U.S.S.R. (labour protection of pregnant women, improvement in their living standards and housing conditions, introduction of physical culture, inculcation of hygienic habits, and development of a network of maternity health centres and medical institutions with highly qualified personnel both in town and country) the incidence of disease connected with pregnancy has sharply decreased, and in this the nurse's efficient work has played an important part.

EFFECT OF THE WOMAN'S HEALTH ON THE COURSE OF PREGNANCY

It was already mentioned that pregnancy makes high demands of the female organism; the diseases which sometimes run an uneventful, chronic course may become aggravated during pregnancy; such are, for example, diseases of the heart, kidneys, etc. This circumstance may very frequently destroy the fetus and, consequently, prematurely interrupt the pregnancy.

There are also such affections as, for example, an underdeveloped uterus or syphilis, the course of which does not seem to become aggravated during pregnancy, but the latter terminates prematurely just the same.

Syphilis of the mother, if the latter was not treated, banefully affects the course of pregnancy and the offspring. The spirochetes circulating in the maternal blood gradually affect the villi and after destroying the latter gain entrance into the fetal blood, infecting the fetus with syphilis and frequently destroying it. In cases of untreated maternal syphilis premature labour resulting in the birth of a dead, not infrequently macerated, fetus is observed. On the other hand, if the pregnancy ends in the birth of a live child, the latter is always infected with syphilis and very often proves to be unviable. *A woman affected with syphilis must undergo treatment before pregnancy and without fail during pregnancy.*

At maternity health centres the blood of all pregnant women, the primigravidas in the first place, is subjected to a Wassermann test for the purpose of detecting syphilis. If the woman is infected, she receives 2-3 courses of special treatment during pregnancy.

Suspicious cases of syphilis must be ascertained by careful questioning of the women at the maternity health centres, the previous pregnancies of these women duly taken into consideration; the pregnant women found to have syphilis and their husbands are referred to a venereal disease clinic for examination and treatment, the importance of such treatment being firmly impressed on their minds. If syphilis is properly treated, the child may be born healthy.

During pregnancy, especially during the second half of it, **active tuberculosis** sometimes becomes aggravated. In cases of tuberculosis the question of preserving the pregnancy is determined by medical specialists. The children of mothers suffering from tuberculosis are not born infected with the disease. During nursing the affected mother must take all precautions to prevent the child from becoming infected (she must wear a mask made of several layers of gauze, etc.). The maternity health centres keep special records of such children.

Of late the newborn are administered a special culture of tubercle bacilli (BCG vaccine) soon after birth to raise their resistance to tuberculous infection.

Alcohol also has a pernicious effect on the offspring. The offspring of dipsomaniacs, especially if both mother and father are alcohol addicts, are noted for high mortality in

childhood; the surviving children are not infrequently affected with various diseases.

Renal diseases, mainly chronic nephritis, constitute a great danger to pregnant women. In cases of nephritis premature disengagement of the placenta is not infrequently observed; in other cases development of uremia is possible, which threatens the lives of both the pregnant woman and the fetus, if the pregnancy is not interrupted in good time.

Cardiovascular diseases often become aggravated during pregnancy and may greatly endanger the health and even the life of the pregnant woman, if no suitable measures are taken in due time.

Malaria which the pregnant woman may have had in the past and, especially, if she has it during pregnancy, perniciously affects the course of pregnancy and the development of the fetus. The *plasmodia* circulating in the blood of the intervillous spaces produce changes in the placenta which not infrequently destroy the fetus. To prevent pregnancy complications, the pregnant women suffering from malaria must be treated.

Pregnancy aggravates the course of **dental caries.** It is therefore necessary to watch the teeth both before and during pregnancy; all affected teeth must be filled or extracted.

It is dangerous to leave affected teeth in the mouth; it should be remembered that during the puerperium every affected tooth is a menace because the bacteria it harbours may provoke grave postpartum diseases.

In cases of inflammatory diseases of the female internal genitalia pregnancy either generally fails to take place or is often discontinued partly because of the defective uterine mucosa and, owing to this, insufficiently firm union between the ovum and the uterus, and partly because of inflammatory changes in the other parts of the sexual apparatus.

From the foregoing it follows that every woman who contemplates to become a mother must be carefully examined and must regularly visit the maternity health centre from the very first weeks of pregnancy. It is also very important to examine her husband. A detailed examination will make it possible to detect whatever affections they may have and to take the necessary measures to safeguard the health of both mother and fetus (prenatal health protection of the fe-

tus). Some diseases require careful systematic observation and treatment of the pregnant woman, while other diseases indicate interruption of pregnancy. The maternity health centres and the nurses they employ must strive to have the pregnant women apply to them soon after the beginning of pregnancy and visit the centre systematically. The sick pregnant women must be systematically visited by community nurses.

CHAPTER VI

DIAGNOSIS OF PREGNANCY

SIGNS OF PREGNANCY

The signs of pregnancy are divided into *probable and authentic.*

Probable Signs. A probable sign of pregnancy is one that always or nearly always appears during pregnancy, although it can also be observed in nonpregnant women. These signs include: 1) cessation of menstruation; 2) nausea, vomiting and changes in the taste; 3) pigmentation of the linea alba, particularly pronounced in brunettes; 4) swelling of the mammae and a pricking sensation in them; 5) increased brownish pigmentation of the nipples and around the nipples with appearance of additional small glands around them, as well as secretion of colostrum from the nipples upon pressure; 6) cyanosis of the mucosa at the vaginal entrance, and 7) enlargement of the uterus found by internal examination; the gravid uterus gradually enlarges and becomes rounded, changing from pear-shaped to spherical. The gravid uterus is soft, but under mechanical stimulation, such as bimanual examination, it contracts and hardens.

All of the foregoing signs may confirm the diagnosis of pregnancy only in aggregate, whereas separately none of them warrants such a diagnosis under any circumstances.

Absence of menstruation is also possible outside of pregnancy, for example, during disorders of the ovarian function; the uterus may also be enlarged in nonpregnant women in cases of uterine tumours; secretion of colostrum is observed even long after childbirth, while the pigmentation of the

linea alba between the navel and the symphysis pubis very often persists after the first childbirth forever. This is why only the aggregate of all or, at any rate, of most of the foregoing signs warrants the diagnosis of pregnancy. In diagnosing *early stages of pregnancy* it is best to re-examine the woman within 10 days, and if all the aforementioned changes have become more pronounced by then, especially if the uterus has enlarged, the woman may be considered pregnant.

Authentic Signs. A sign is authentic when it quite confirms the diagnosis of pregnancy. There are three such signs which are entirely sufficient for practical purposes. These signs are: 1) palpation of parts of the fetus, 2) feeling the movements of the fetus during palpation of the pregnant woman's abdomen, and 3) auscultation of the fetal heartbeats.

The authentic signs of pregnancy also include a picture of the fetal skeleton on the roentgenogram.

A biological method of diagnosing early stages of pregnancy by injecting the urine of the pregnant woman to sexually immature mice (the Aschheim-Zondek test) has gained currency in recent years. The urine of pregnant women contains a hormone (*prolan*) which quickens the maturation of the follicles in the ovaries of sexually immature mice.

METHODS OF EXAMINING PREGNANT WOMEN

In this case methods imply the sequence and procedures used in examining pregnant women.

Questioning. After recording on a special card the pregnant woman's name, age, occupation and address, as well as her heredity and the diseases she has had, the pregnant woman is usually asked the following questions:

1. The date of appearance of the first menstruation and the nature of the menstruations before and after marriage.

2. The number of times the woman has been pregnant, how many children she has borne, the character of her previous pregnancies, labour and puerperium; how many abortions she has had and whether or not they were spontaneous or artificial. The question concerning the abortions is extraordinarily important since artificial abortions often pro-

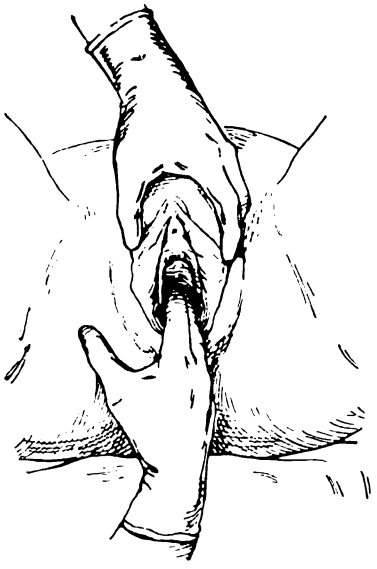


Fig. 54. Bimanual examination (hands are gloved)

duce various complications during successive pregnancies and, especially, labour. An artificial abortion even produced under optimum conditions by a qualified specialist is a serious operation. An abortion produced under unsanitary conditions by an ignorant quack is extremely dangerous. Many young, healthy women die from such abortions and many more remain invalids for life because of the different inflammatory processes they provoke in the genitalia. Abortions may result in sterility. Pregnancies and childbirth following abortions are not infrequently accompanied by a number of complications, namely, extrauterine pregnancy, weak labour, and hemorrhages during pregnancy, parturition and the puerperium.

3. The date of the *last menstruation*, which helps to determine the approximate stage of pregnancy and the time of forthcoming labour.

4. Probable signs of pregnancy if it is a question of its early stage.

Bimanual examination. During early stages of pregnancy a bimanual examination is performed (by a physician or midwife) in addition to ascertaining all the probable signs of pregnancy. For this examination the woman (after first urinating) is placed in a gynecological chair or on a couch with her legs flexed in the hip and knee joints. The examiner thoroughly washes his hands and, carefully parting the labia with two fingers of the left hand, examines the vaginal entrance, determining its form, the condition of the hymen and

perineum, and colour of the epithelium of the vaginal walls; following this the examiner parts the labia more and introduces two fingers—the index and middle finger—of the right hand into the vagina (Fig. 54); in cases of a narrow vaginal entrance the examination is performed with one finger—the index. The cervix and corpus uteri are palpated by means of the bimanual examination, the left hand fixing the uterus

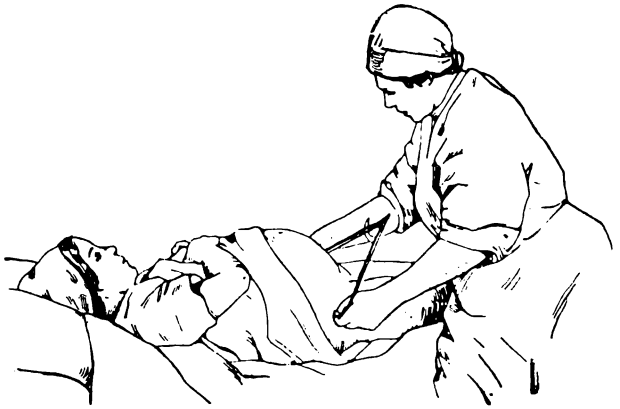


Fig. 55. Measuring the external pelvic dimensions with the gravid woman in supine position

through the abdomen. The examination determines the size of the uterus, its consistency and whether or not it contracts (hardens) during the examination. Following the examination the internal measurements of the pelvis are determined.

Pelvic measurements. The pelvis is measured to ascertain the possible hindrances to labour during the passage of the mature fetus through the pelvis. Numerous observations have established the correlations between the size of the head of the mature fetus and the size of the pelvis, and on this basis have determined the average measurements considered normal. A pelvis which measures less than normal is considered contracted or narrow. In measuring the pelvis its external measurements are determined and by them the internal measurements are judged.

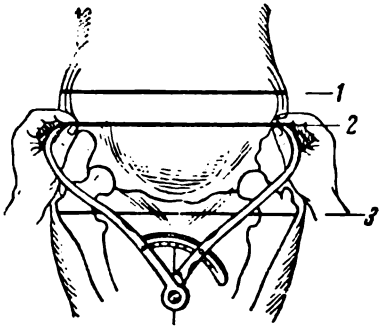


Fig. 56. External transverse pelvic measurements. *Distantia spinarum* (2)—distance between anterior superior iliac spines; black lines show the *distantia cristarum* (1) on top, and the *distantia trochanterica* (3) on the bottom

The pelvis is measured with a special compass known as a *pelvimeter*, while the pregnant woman lies on her back (Fig. 55).

The distances between the following points of the pelvis are measured (Fig. 56):

1) between the anterosuperior iliac spines (*distantia spinarum*); in a normal pelvis this distance measures 25-26 cm;

2) between the distal points of the iliac crests (*distantia cristarum*); in a normal pelvis this distance measures 28-29 cm;

3) between the greater trochanters (*distantia trochanterica*); in a normal pelvis this distance measures 30-31 cm;

4) between the upper border of the symphysis pubis and the recess on the back under the spinous process of the 5th lumbar vertebra; this is the direct external measurement or *external conjugate* (*conjugata externa*); in a normal pelvis it measures 20 cm. For measuring the external conjugate the pregnant woman turns on her side, flexes the underleg in the knee and hip joints and extends the upper leg (Fig. 57).

The internal direct measurement is calculated by the external direct measurement: from the sacropromontory to the upper border of the symphysis—the direct measurement of the pelvic inlet; for this purpose 9 cm is subtracted from the size of the external conjugate; in a normal pelvis the direct size of the inlet measures 11 cm.

The direct measurement of the pelvic inlet (see Fig. 84) is otherwise called the true conjugate.

The true conjugate is determined by the size of the so-called diagonal conjugate, i.e., by the distance between the lower border of the symphysis and the sacropromontory.

The diagonal conjugate is measured by a vaginal examination (Fig. 58). The true conjugate is usually 1.5-2 cm shorter than the diagonal conjugate. During examination of the pregnant woman special attention is devoted to the structure and shape of her abdomen and back. A quadrangular figure may be observed in the lumbosacral part of her back. If the pelvis is normal, this quadrangle has the shape of a rhomboid—the lumbosacral or Michaelis' rhomboid (Fig.

Fig. 57. Measuring the external anteroposterior pelvic dimension—the external conjugate. One leg of the pelvimeter is placed in the depression under the spinous process of the fifth lumbar vertebra, the other leg—on the upper border of the symphysis

59). If the pelvis is contracted or irregular, the shape of the quadrangle is also irregular (Fig. 59a).

Moreover, the measurements of the pelvis may also be judged partly by the shape of the pregnant woman's abdomen. In cases of a contracted pelvis, in which the head of the fetus cannot fit the pelvis the abdomen of the pregnant woman sags anteriorly towards the end of pregnancy (Fig. 60).

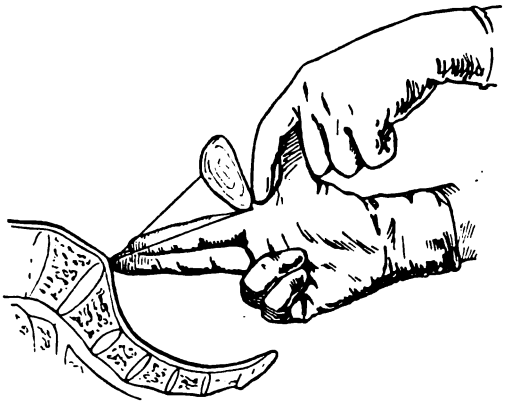


Fig. 58. Measuring the diagonal conjugate

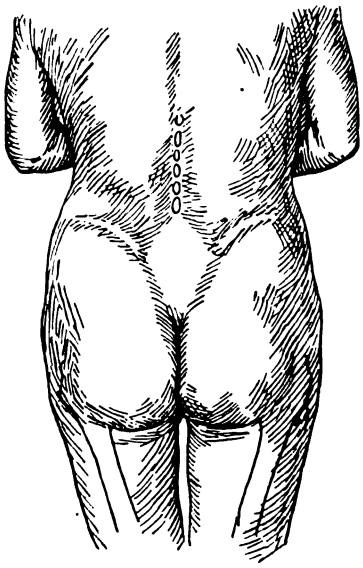


Fig. 59. Lumbosacral rhomboid (Michaelis') in normal pelvis

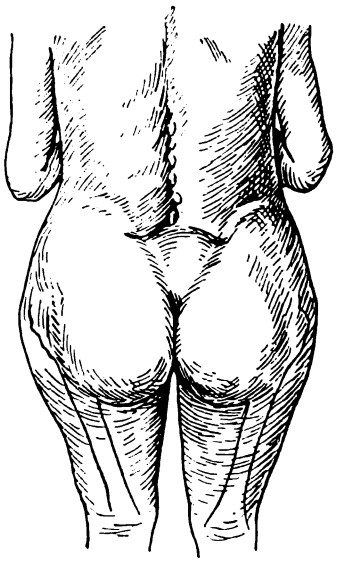


Fig. 59 a. Lumbosacral rhomboid in irregular pelvis

Position of the fetus. During the late stages of pregnancy the position of the fetus in the uterus is determined by palpation of the pregnant woman's abdomen. The positions of the fetus may vary.

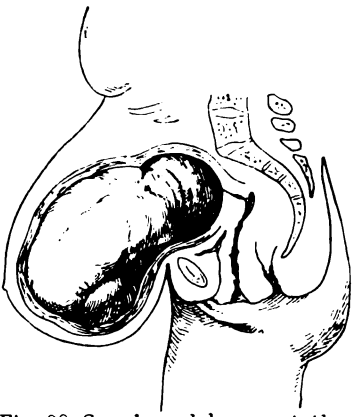


Fig. 60. Sagging abdomen at the end of pregnancy in a woman with contracted pelvis

Longitudinal position: The fetus is in a position in which its long axis corresponds to the long axis of the uterus. The longitudinal position of the fetus may have *cephalic presentation*, if the fetal head is at the pelvic inlet (Fig. 61), or *breech presentation*, if the buttocks of the fetus are at the pelvic inlet (Fig. 62).

Oblique or *transverse* position in which the longitudinal axis of the fetus crosses the longitudinal axis of the uterus (Fig. 63). With the fetus in the longitudinal position the uterus is usually somewhat elongated; when the fetus is in the transverse position the uterus is somewhat distended transversely.

The pregnant woman's abdomen is examined, while the woman is in a supine position, in the following sequence:

1. The height at which the *fundus uteri* is located is determined with both hands placed on the fundus uteri, as shown in Fig. 64.

2. Both hands are dropped from the fundus uteri along the lateral uterine walls and the parts of the fetus are palpated in the interior alternately with the left and right hands (Fig. 65). After the small parts of the fetus have been palpated on one side the back of the fetus is palpated on the opposite side, and the position and presentation of the fetus are thus determined.

3. Either the right or the left hand is dropped still lower (Fig. 66); the lower segment of the uterus is carefully grasped with the palm, the thumb greatly abducted, and the fingers are cautiously sunk into the abdomen in an attempt

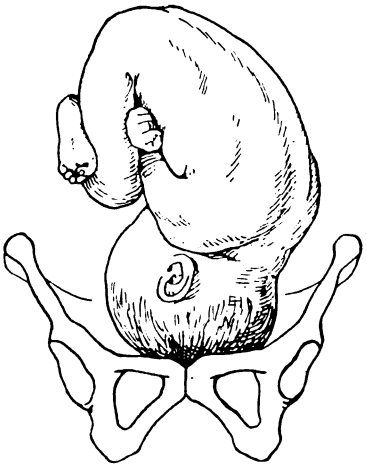


Fig. 61. Longitudinal cephalic presentation

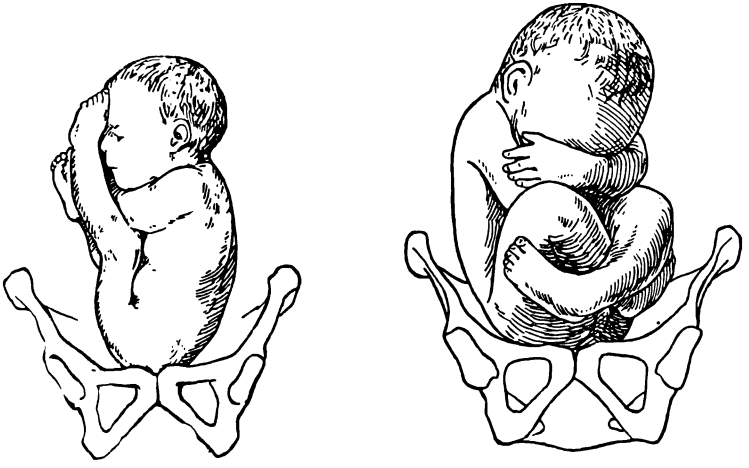


Fig. 62. Longitudinal breech presentation (two variants)

to palpate the part of the fetus which is located at the pelvic inlet, i.e., the presenting part—the head or buttocks. The head is palpated as a round, dense, spherical body which sometimes easily rebounds.

4. If the presenting part of the fetus cannot be clearly palpated by the aforesaid method, the method shown in Fig. 67 is used. In cases of cephalic presentation the finger-tips contact a round dense body, whereas in cases of breech presentation the finger-tips palpate the large soft part of the fetus. If the fetus is in a transverse position, the large part of the fetus cannot be palpated either above or below; in such cases the head and buttocks are on the sides of the uterus.

Fetal heartbeats. After palpation of the pregnant woman's abdomen the fetal heartbeats are auscultated, for which purpose a special obstetric stethoscope is used (Fig. 68).

Usually the fetal heartbeats can be auscultated from the end of the fifth lunar month of pregnancy, after which they are auscultated more clearly with each passing month.

The heartbeats are well auscultated closer to the head and on the side to which the back of the fetus is turned. Consequently, if the back of the fetus is turned to the left and the head is at the bottom, (longitudinal position, cephalic presentation), the heartbeats are best auscultated to the left of the abdominal midline, below the navel; in cases of breech presentation the fetal heartbeats are best auscultated above the navel (Fig. 69). With the fetus in a transverse position the fetal heartbeats are auscultated on the level of the navel, on the right or left, depending on the position of the head.

Towards the end of pregnancy the fetal heart usually beats at a rate of 120-130 rhythmic beats per minute.

After the obstetric examination the woman's height is measured (Fig. 70), the woman is weighed (Fig. 71) and is given a general examination in the course of which her heart and lungs are auscultated, the urine is analysed, the arterial pressure is measured, etc.

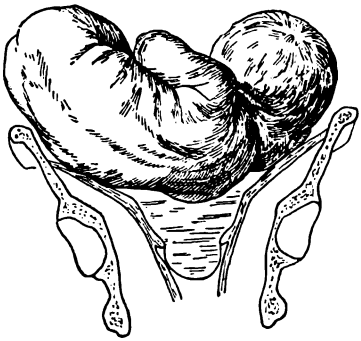


Fig. 63. Transverse position of fetus

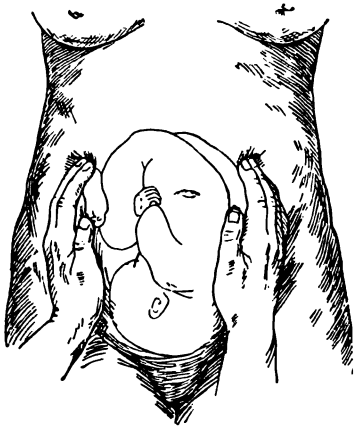


Fig. 65. Examination of the gravid abdomen. Second method —determination of fetal position and presentation. Figure shows longitudinal cephalic presentation

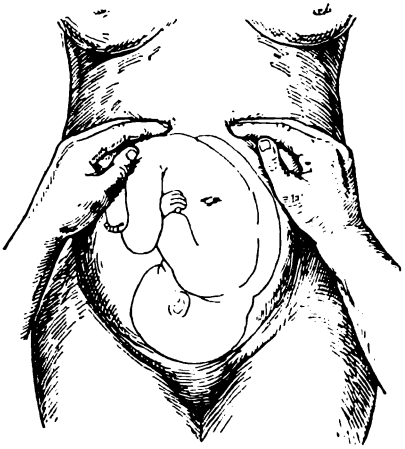


Fig. 64. Examination of the gravid abdomen (external methods). First method—determination of the fundal height

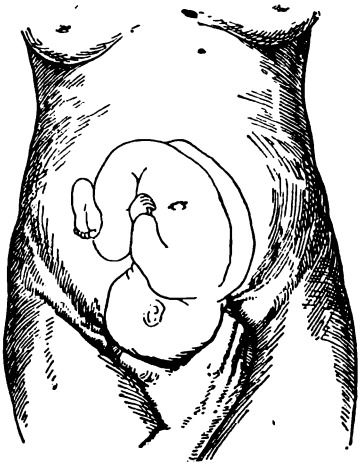


Fig. 66. Examination of the gravid abdomen. Third method —determination of the presenting part of the fetus with one hand

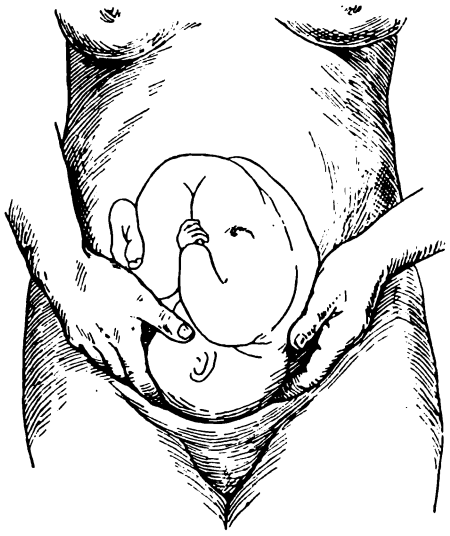


Fig. 67. Examination of the gravid abdomen. Fourth method—determination of the presenting part of the fetus with two hands

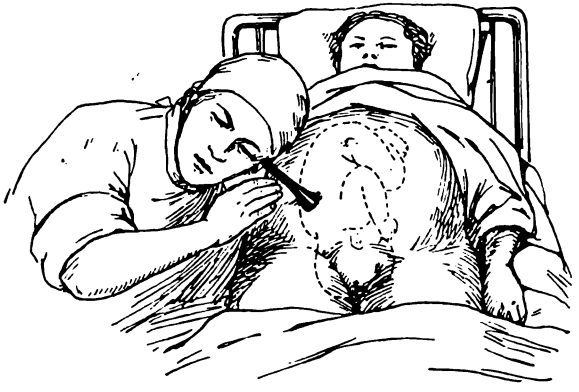


Fig. 68. Auscultation of fetal heart with obstetric stethoscope

DIAGNOSING MULTIPLE PREGNANCY

Sometimes not one, as usual, but two or even three fetuses develop simultaneously during pregnancy. In such cases it is said that the pregnant woman is carrying twins or triplets.

Twin pregnancy is observed on an average of 1:80-100 births, and triplet pregnancy—1:7,000-10,000 births.

As was already mentioned, one follicle bursts and one ovum is discharged during each ovulation. In extremely rare cases two follicles burst during one ovulation and two ova are discharged. One follicle may also simultaneously contain two ova. In such cases both ova may be fertilised and two fetuses—*dizygotic twins*—may develop simultaneously. In these cases there are two placentas, two chorions and two amnions. Monozygotic twins are encountered much more rarely; these twins do not develop from two ova, but from one, owing to division of one fertilised ovum into two parts, each of which develops into an independent organism.

In cases of monozygotic twins there is one common placenta and one common chorion, but two separate amnions. Monozygotic twins are always of the same sex, i.e., either boys or girls.

Diagnosing two fetuses in the uterus presents considerable difficulties.

A large abdominal girth of the woman at the end of pregnancy (100 cm and more), palpation of three large parts of the fetus in the uterus (two heads and one pelvic end) and simultaneous auscultation of two different kinds of fetal heartbeats in different places warrant the assumption of twins. An exact diagnosis of multiple pregnancy can be made during the second half of pregnancy by means of a roentgen picture.

Twins may be located in the uterus variously, i.e., both fetuses may be in either a longitudinal (Fig. 72) or transverse position (Fig. 73), or one fetus may be in a longitudinal and the other in a transverse position.

In cases of multiple pregnancy complications are observed more frequently both during pregnancy (toxemias and premature labour) and parturition (weak labour and hemorrhages).

DETERMINING THE STAGE OF PREGNANCY AND THE TIME OF FORTHCOMING LABOUR

The stage of pregnancy is determined at the same time the pregnancy is diagnosed. Soviet laws provide 56 days of maternity leave for working women before childbirth, and an accurate determination of the stage of pregnancy guarantees for the woman this necessary rest period.

The Rules of the Agricultural Artel contain an article on maternity leave for preg-

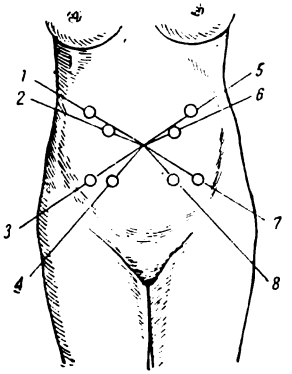


Fig. 69. Points at which fetal heart is heard best (marked with circles)

1 and 2—breech presentation; 3 and 4—cephalic presentation; 5 and 6—breech presentation; 7 and 8—cephalic presentation

Fig. 70. Measuring the pregnant woman's height.

Fig. 71. Weighing the pregnant woman (the woman must be disrobed)

nant collective farm women; this article has the force of a law and allows the collective farm woman to rest during the last month of pregnancy and build up her strength for the forthcoming childbirth.

Collective farms have the right of introducing changes into the Rules of the Agricultural Artel, including increases in maternity leave for collective farm women and giving

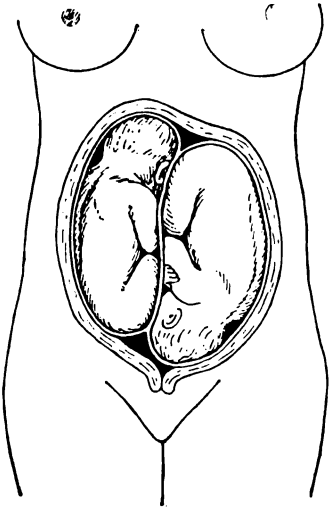


Fig. 72. Twins. The fetuses are in longitudinal position; one in breech presentation and the other in cephalic presentation

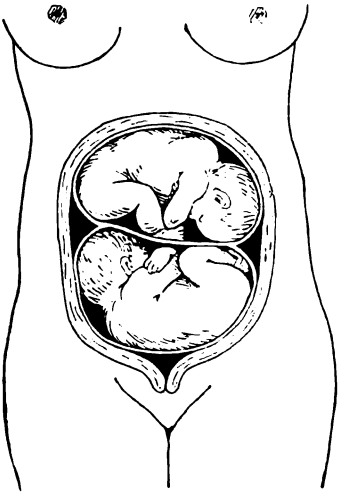


Fig. 73. Twins. Both fetuses are in transverse position

them the same leave as is granted to women workers and employees (56 days before and 56 days after childbirth). This rest is undoubtedly very important for both the expectant mother and her future child.

It has been established by numerous observations that women who rest before childbirth have easier labour and much fewer postpartum diseases; they also bear healthier children than do women who had no rest before childbirth.

Human pregnancy lasts an average of 280 days, i.e., 40 weeks or 10 lunar months. To determine the time of

childbirth more accurately, it is necessary to observe the woman from early stages of pregnancy, i.e., 1-2 weeks after suspension of menstruation.

In practical work the *stage of pregnancy and time of childbirth are calculated* from the first day of the last menstruation. The day on which the fetus begins to move also helps in establishing the stage of pregnancy and the time of parturition. The fetus usually begins to move in the middle of pregnancy (in primigravidas).

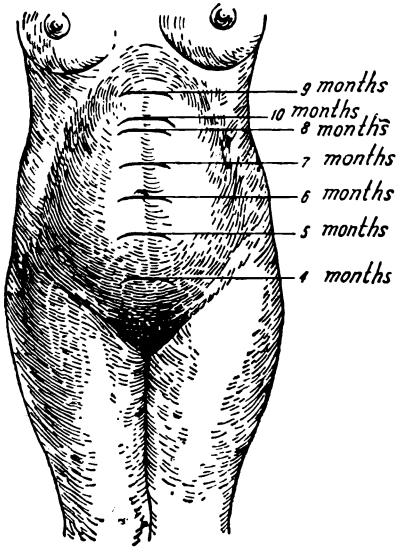


Fig. 74. Fundal height during the different months of pregnancy

Of course, this calculation is not absolutely precise since the woman may not remember the day of her last menstruation, as is often the case, or may merely confuse the dates. The first movements of the fetus are a very subjective sign since the woman sometimes mistakes intensified intestinal peristalsis for the movements of the fetus.

However, it is necessary, as far as possible, to establish the aforesaid dates with greater accuracy by leading questions. It is necessary by means of extensive health education to impel the women accurately to memorise or even to record the day and month of the last menstruation and of the first fetal movements; the pregnant women should apply as early as possible to the maternity health centre in town, or to the collective farm maternity home or medical and obstetric station in the countryside.

During the first months the stage of pregnancy is determined by a simple calculation of the time that has elapsed since the last menstruation, taking the size of the uterus into consideration. The stage of pregnancy is calculated

by the last menstruation as follows: three months are counted back from the first day of the last menstruation and seven days are added to the date thus obtained; for example, the first day of the last menstruation was December 1, 1959; counting back three months (November, October and September) yields the date of September 1; addition of seven days indicates September 8, 1960, which is the assumed date of childbirth.

The stage of pregnancy may also be estimated by determining the size of the pregnant uterus and by measuring the distance of the fundus uteri from the symphysis pubis, taking into consideration the average figures established for each month of pregnancy (Fig. 74).

Up to three months of pregnancy the uterus is still in the cavity of the minor pelvis, for which reason the stage of pregnancy is determined during this time only by vaginal examination.

Before a vaginal examination the woman must urinate and, if she has had no bowel movement on that day, cleanse her intestines with an enema. Replete urinary bladder and rectum hinder the examination.

At the end of the *second* lunar month of pregnancy the uterus is as large as a goose egg.

At the end of the *third* lunar month the uterus is approximately the size of a man's fist.

During the fourth lunar month the fundus uteri rises above the symphysis pubis and is palpated through the abdominal wall. At the end of the *fourth* lunar month the fundus uteri is located 6 cm above the upper border of the symphysis pubis.

At the end of the *fifth* lunar month the fundus uteri is located 10-12 cm above the upper border of the symphysis pubis.

At the end of the *sixth* lunar month the fundus uteri is located on the level of the navel, i.e., 20 cm above the symphysis pubis.

At the end of the *seventh* lunar month the fundus uteri is located three digits above the navel, i.e., 24 cm above the upper border of the symphysis pubis.

At the end of the *eighth* lunar month the fundus uteri is located midway between the navel and the xiphoid proc-

ess, i.e., 28 cm above the upper border of the symphysis pubis.

At the end of the *ninth* lunar month the fundus uteri reaches the epigastrium and is located under the xiphoid process, propping up the diaphragm; this is the highest location of the fundus uteri during pregnancy—32 cm above the upper border of the symphysis pubis. Subsequently the constantly enlarging pregnant uterus begins to lean forward, for which reason its fundus descends.

At the end of the *tenth* lunar month the fundus uteri comes down approximately to the same level at which it was located at the end of the eighth lunar month, i.e., midway between the xiphoid process and the navel; towards the tenth month the navel is usually effaced.

Measurements of the location of the fundus of the gravid uterus above the symphysis pubis usually yield the following figures:

Stage of pregnancy	Distance between the symphysis pubis and fundus uteri
End of fourth lunar month	6 cm
„ „ fifth „ „	12 „
„ „ sixth „ „	20-24 „
„ „ seventh „ „	24-28 „
„ „ eighth „ „	28-30 „
„ „ ninth „ „	32-34 „
„ „ tenth „ „	28-30 „

The *girth of the abdomen* is measured along a line running through the navel and the lumbar region.

During the eighth lunar month the girth of the abdomen measures 80 cm; at the end of pregnancy, i.e., during the tenth lunar month, it measures 97-100 cm.

During external examination in the last month of pregnancy special attention should be devoted to the position of the fetal head; in primiparas the head of the fetus usually begins to press itself against the pelvic inlet during the last two weeks before parturition and frequently firmly establishes itself in the inlet, for which reason it is difficult

to shift it; in multiparas the fetal head remains mobile over the pelvic inlet until the onset of labour.

All the data obtained by examination are recorded on the pregnant woman's special card.

HYGIENE AND DIET OF PREGNANT WOMEN

Pregnancy is a healthful physiological process. As was already mentioned, pregnancy imposes high demands on the entire female organism, and it is therefore clear why the state of the woman's health, favourable living and working conditions, and observance of a rational regimen are so important for a favourable course of pregnancy.

As was already stated, in the Soviet Union considerable attention is devoted to health protection of pregnant women; both at work and in private life pregnant women enjoy a number of privileges which enable them to become healthy mothers of healthy children (p. 22).

Hygiene of the pregnant women implies, in a broad sense, both feminine hygiene in general and prenatal protection of the child's health. It would be wrong to consider hygiene of the pregnant woman apart from that of the woman before pregnancy (p. 64), i.e., from her earliest childhood.

During pregnancy the rules of hygiene must be somewhat altered. The organism of a healthy woman, who keeps to a rational regimen, correctly combines work with rest, eats normally and takes enough fresh air, easily copes with the new state in which it is put by pregnancy. In such cases pregnancy is a salutary factor and the first pregnancy not infrequently helps in the final development of the organism.

In cases in which the proper regimen of pregnancy is not adhered to pregnancy may sometimes unnoticeably become pathological.

By carefully observing the woman from the first weeks of pregnancy it is possible to discover the deviations in the state of her health in good time and by measures carried out in due time to prevent possible pathology. This work is done by physicians, midwives and nurses of the maternity health centres, midwives of collective farm maternity homes and of medical and obstetric stations.

One of the particularly important hygienic measures during pregnancy is a *proper diet*. It has been established by a number of observations that an irrational diet is responsible for a high percentage of the toxemias of pregnancy. It should be noted that a rational diet not only prevents, toxemias of pregnancy, but also serves as a therapeutic factor. The pregnant woman's diet must include definite nutrient substances and enough of vitamins A, B_1, C, D and E.

Vitamin A enhances the resistance of the organism. Large amounts of this vitamin are found in the livers of fish and in carrots. Ready-made preparations of this vitamin may be used; these preparations are put out in pills (2-4 pills per day) or in liquid form (1-2 drops b.i.d. during meals).

Vitamin B_1 prevents development of vomiting during pregnancy, polyneuritis, rapid fatigue and weak labour. It is found in whole wheat and whole rye bread and in yeasts. Ready-made preparations of this vitamin in the form of pills may also be used, 10-20 mg constituting a daily dose.

Vitamin C, or ascorbic acid, helps to safeguard the pregnancy. It is found in large amounts in brier, black currants, cabbage, fruits and berries. Ascorbic acid may be taken with glucose in the form of patent tablets and dragée (*Acidi ascorbinici* 0.2, Sacchari albi 0.3—one powder t.i.d.).

Vitamin D, or antirachitic vitamin, prevents the development of fetal rickets. It is found in cod-liver oil which has to be taken in a dose of one tablespoonful b.i.d.

Vitamin E also helps to safeguard pregnancy, especially in cases of women who had many miscarriages, and favours normal development of the fetus. It is found in large amounts in germinating grains of wheat and in lettuce. This vitamin is also used in the form of a synthetic preparation during the first half of pregnancy and sometimes longer, up to 7-8 months. Its daily dose is 20-30 mg.

The food of pregnant women must contain enough iron and calcium salts, for which reason pregnant women are advised to eat eggs and vegetables, and drink milk. Boiled beef and other foods containing full-value proteins are also allowed. The diet must be modified on the appearance of the least signs of edema, in which case consumption of meat, fats, common salt and different spices is limited and sometimes entirely prohibited.

Attention must also be devoted to consumption of liquids. Pregnancy is usually attended with thirst, but consumption of too much water may sometimes disturb the

water metabolism. Consumption of liquid must also be limited in cases of kidney and heart diseases. The average amount of liquid consumed per day must not exceed 6 glassfuls. It is, of course, also necessary to take into consideration the daily diuresis.

The dining-rooms at industrial enterprises employing many women offer a special menu for pregnant women; the menu is worked out and checked either by the physician of the given enterprise or a physician assigned by the maternity health centre. This measure constitutes the best prophylaxis of toxemias of pregnancy.

In some cases of pregnancy attended with nausea and vomiting it is recommended to take breakfast in bed; after each subsequent meal it is advisable to lie down for a short rest.

The diet of each pregnant woman is prescribed and regulated by a physician. It must contain a variety of foodstuffs. In the course of a day the woman must consume about 100 g of proteins, 100 g of fats and 500 g of carbohydrates, which total close to 3,500 calories.

The following is a pregnant woman's model ration:

Rye bread	200 g	Potatoes	250 g
Wheat "	250 "	Vegetables	500 "
Wheat flour	25 "	Fresh fruits and berries	150 "
Potato "	5 "	Dried fruits	15 "
Cereals and maccaroni	75 "	Sugar and confectionery	60 "
Meat	100 "	Sour cream	60 "
Fish	50 "	Butter	50 "
Milk	500 "	Vegetable oil	10 "
Curds	50 "	Cod-liver oil	15 "
Cheese	20 "	Eggs	1.5 "

Model Menu for the Second Half of Pregnancy

Five meals a day (including the meal taken on an empty stomach). Rye bread—200 g; wheat bread—200 g.

Daily on an empty stomach—one apple, or 50 g of soaked prunes, or one raw carrot.

First Day

Breakfast (7:00-8:00 a.m.)	Boiled potatoes Bread with butter and cheese Tea with milk
Lunch (11:00 a.m.-12:00 noon)	Curds with sour cream Bread and butter
Dinner (3:00-4:00 p.m.)	Vegetarian soup with mushrooms and oats Boiled fish with potatoes Stewed fruit
Supper (7:00-8:00 p.m.)	Vegetable stew Sour milk

Second Day

Breakfast	Russian salad (potatoes, fresh cabbage, carrots, beets and onions) Bread with butter and cheese Tea
Lunch	Buckwheat gruel with milk
Dinner	Green-vegetable soup with sour cream Boiled beef with potatoes Apple
Supper	Scallion omelet Sour milk

Third Day

Breakfast	Maccaroni with butter and cheese Tea with milk
Lunch	1 boiled egg or omelet Green-vegetable salad Bread and butter
Dinner	Vegetable or fruit soup with rice (rice—30 g, dried apricots—50 g, sugar—20 g) Potato pudding Cranberry mousse
Supper	Cheese cakes with sour cream Tea with milk Bread and butter

Fourth Day

Breakfast	Curds with sour cream Bread and butter Tea

Lunch	Stewed vegetables with butter Coffee with milk, or sour milk
Dinner	Fish soup with cereals Boiled fish with potatoes Fresh or stewed fruit
Supper	1 egg Bread and butter Apple

Fifth Day

Breakfast	Apple fritters Bread with butter and cheese Tea
Lunch	Curd cakes with sour cream Milk
Dinner	Vegetarian cabbage soup Boiled beef with mashed potatoes Fresh fruit
Supper	Boiled rice with butter Sour milk

Sixth Day

Breakfast	Boiled cabbage, breaded and fried Bread with butter and honey Tea
Lunch	Buckwheat gruel with milk
Dinner	Vegetarian cabbage soup with sour cream Boiled beef with potatoes or boiled rice
Supper	Pancakes with egg and curds Fresh or sour milk

Seventh Day

Breakfast	Maccaroni with cheese Coffee with milk, or sour milk
Lunch	Curds with sour cream Bread and butter
Dinner	Milk soup with cereal Boiled meat balls with potatoes and lettuce (or stewed carrots) Fresh or stewed fruit

Supper	Barley porridge (or oatmeal) with butter Salad of fresh shredded cabbage, carrots, green peas and other vegetables Fresh or sour milk

Note: The foregoing is a model menu and the dishes may be replaced by other dishes of equally valuable composition and nutritiousness.

The *intestines* must be watched all through pregnancy and their functions regulated by a suitable diet (sour milk, prunes, apples). In extreme cases, if constipation persists, enemas have to be resorted to; no laxatives should be taken without the physician's prescription.

During pregnancy the mouth must be taken care of by treating all the affected teeth.

The pregnant woman must not *sleep* more than about eight hours a day; it is inadvisable to sleep long during the day-time because this interferes with night sleep.

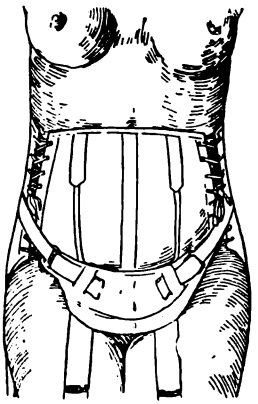


Fig. 75. Binder for pregnant women. Stockings are attached to binder with elastic garters. Front view

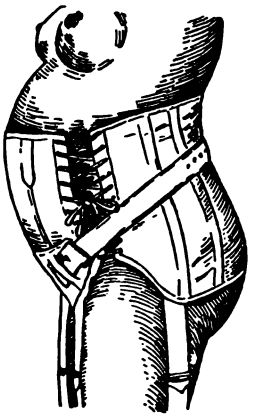


Fig. 76. Binder for pregnant women. Side view

The pregnant woman must wear light and loose-fitting clothes. No tight strings or belts are allowed. No round garters should be worn because they compress the shank

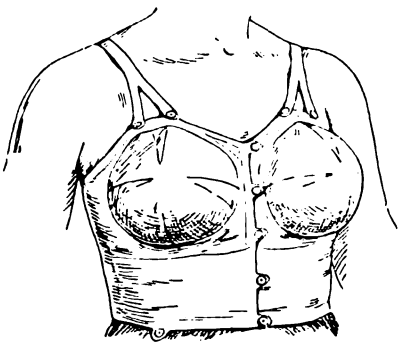


Fig. 77. Underbodice with shoulder-straps for pregnant women

too tightly and impede normal blood circulation; long rubber bands or laces buttoning to the underbodice or binder should be worn instead. The footwear must be loose-fitting, light and low-heeled.

From the sixth or seventh lunar month of pregnancy it is advisable to wear a *binder* (Figs. 75 and 76) or tie a wide towel round the abdomen. This is necessary to keep the uterus in a proper position and to prevent excessive distention of the abdominal wall.

During pregnancy women must wear an *underbodice* instead of the usual brassière; the underbodice must firmly embrace the breasts and slightly raise them (Fig. 77). The underbodice should preferably be made from rather coarse material (thin canvas, linen).

Pregnant women must *stay outdoors* for long periods, but must not take tiring walks. Walks during the same hours—in the morning, after dinner and before sleep—are preferred; the women must walk slowly, speak less and try to breathe deeply.

Each pregnant woman must have an *individual bed.* The linens must be changed at least once a week since pregnant women perspire profusely and the linens therefore become soiled more rapidly. The blanket must be encased in a blanket-cover.

Body cleanliness is very important; a pregnant woman must wash to the waist with water at room temperature and dry herself with a clean Turkish towel every day. This is also enough to keep the nipples clean and to prepare them for the forthcoming nursing.

The skin performs its functions best when it is clean, which is particularly important during pregnancy. Pregnant women must not take hot baths because of their debili-

tating effect. The usual warm bath (water temperature of 34-35°C) must not last more than 12-15 minutes. In the last month of pregnancy the woman must take showers or wash in a bath-tub while sitting on a small stool placed therein.

River and sea bathing may be allowed in cases of normal pregnancy. However, swimming far is strictly prohibited since it is dangerous because of the possible muscle cramps in the limbs.

All forms of bathing are necessary because they not only keep the body clean, but also favourably influence general metabolism.

The pregnant woman's *nails* must be cut short. This is particularly important shortly before labour because dirt accumulates under long nails and threatens the pregnant woman with infection.

To prevent puerperal diseases the pregnant woman must have no contact with *contagious patients*, especially during the last months of pregnancy.

The *external genitalia* must be washed daily with lukewarm boiled water and soap after first carefully washing the hands. This is usually done as follows: the woman fills an Esmarch's can, a pitcher or a tea-kettle with water and, squatting over a basin, pours the water with one hand and washes the genitalia with the other; the hands must move from the mons Veneris towards the anus and not in the opposite direction. Towards the second half of pregnancy it is difficult for the woman to squat, for which reason she must put the basin on a stool or perform her toilet in a recumbent position (an Esmarch's can is the most convenient) with not a very strong stream of water. Only the external genitalia must be washed; *no douching or vaginal irrigation during pregnancy are allowed without a physician's prescription.* By the time of childbirth the vagina is relatively "clean", while douching rather leads to contamination of the vagina because it diminishes its self-cleaning ability. If the pregnant woman has a profuse discharge, especially puruloid, she must consult a physician.

During pregnancy *sexual intercourse* must, as far as possible, be restricted, especially during the first two months, and absolutely excluded during the last 1.5-2 months. Frequent and very passionate coitus may lead to a miscarriage,

whereas during the last month of pregnancy coitus may serve to introduce into the vagina pathogenic bacteria which cause puerperal diseases.

There are no special methods *of preparing the breasts* for nursing. Different methods of preparing the nipples have been used; these include daily sponging with alcohol or a solution of tannin, massage and irradiation with a quartz lamp. All these methods are aimed mainly at preventing the formation of fissures on the nipples, because these fissures are infection gates for mastitis (inflammation of the mamma). Unfortunately, however, not one of these methods prevents formation of fissures.

It is important to keep the body clean and, if the woman washes herself to the waist every day, the nipples are also clean. Only in cases of very flat or retracted nipples (Fig. 78) it is necessary to resort to massage in order to draw the nipples out. To do this, the hands are carefully washed, the nipple is grasped with the fingers and stretched for

Fig. 78. Different forms of the nipple (normal, flat and retracted)

a period of 3-5 minutes. If the massage proves ineffective, it is best to abandon it, in which case the women will use a special nipple shield during nursing.

General ultraviolet irradiation is very beneficial for the pregnant woman because it enhances the formation in the organism of vitamin D which prevents the development of rickets in the fetus and plays an important role in the regulation of calcium and phosphorus metabolism in the pregnant woman. Moreover, ultraviolet rays kill bacteria. Irradiation is contraindicated in cases of malaria, tuberculosis and renal disease.

Of the sanatory measures carried out during pregnancy an important part is played by *physical exercise.* Rational physical exercise enhances the vital activities of the en-

tire organism, strengthens the abdominal muscles, prevents divarication of muscles and formation of so-called scars of pregnancy. Physical exercise makes the muscles of the pelvic floor very elastic and thus prevents perineal lacerations during labour.

The woman must be given a set of recommended exercises and taught how to do them herself.

The physical exercises performed by the pregnant woman require *strict medical control.* The woman doing the exercises at home must visit the maternity health centre every 10 days for further instructions from the physician.

While exercising the woman must be sure to breathe correctly because good pulmonary ventilation ensures a good supply of oxygen to the whole organism. Physical exercise enhances the general blood circulation and metabolism, gives necessary work to the muscular systems of the body and strengthens the muscles of the abdominal wall and the pelvic floor.

The woman is taught completely to relax after each exercise; for this purpose it is advisable to do most of the exercises in a recumbent or sitting position.

All exercises must be performed slowly and, as far as possible, smoothly and evenly, avoiding fast and abrupt movements. After returning to the initial position it is necessary to pause for at least 5-10 seconds. All in all the exercises must not last more than 10-15 minutes. Exercising for longer periods may harm the pregnant woman.

After the exercises the woman must take a lukewarm shower or sponge herself and then dry herself thoroughly with a Turkish towel.

The exercises should be performed in the morning, before the toilet, the woman wearing only a nightgown or shorts. In summer it is best to do the exercises outdoors or before an open window; in winter the room should be well aired before the exercise period.

The following exercises are recommended for the pregnant woman (Fig. 79a-n):

Exercise 1 (Fig. 79 a). Breathing exercise in a supine position. Legs are bent. While inhaling deeply slowly raise the arms and place them, extended, beyond the head (inhale through the nose); while exhaling (through the mouth) slowly return the arms, extended, to a position along the body.

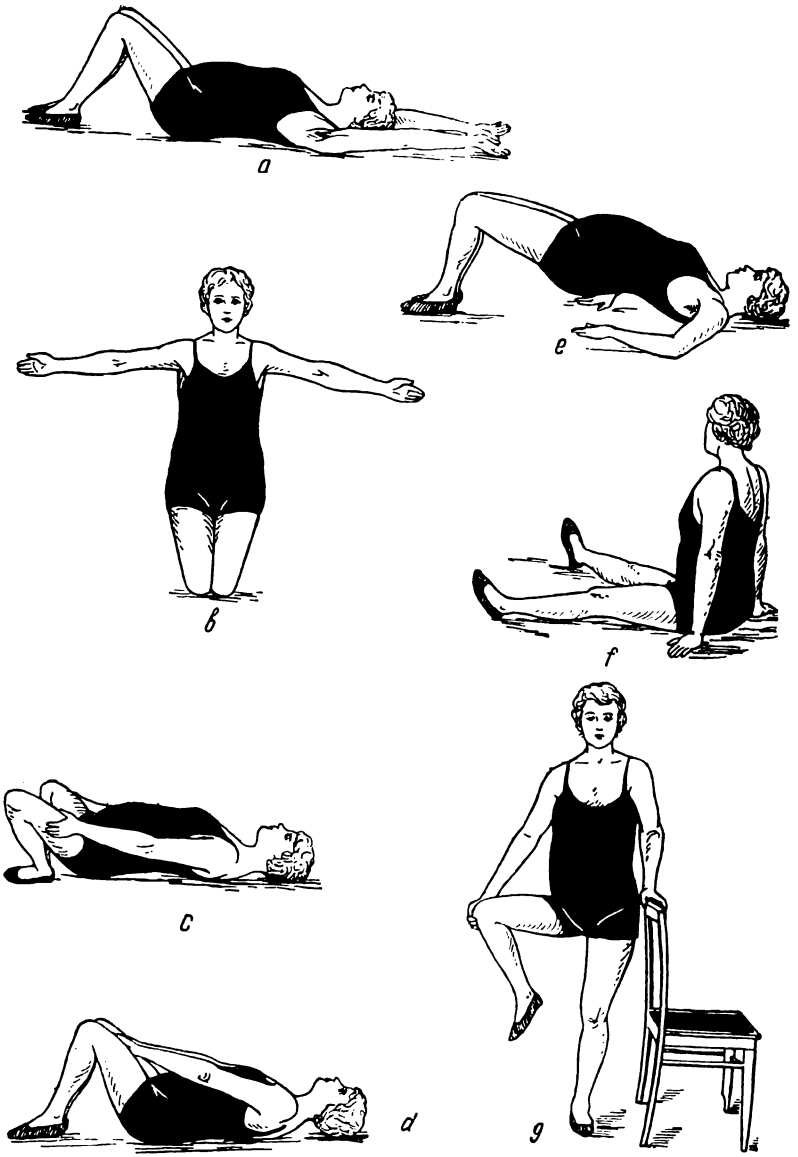
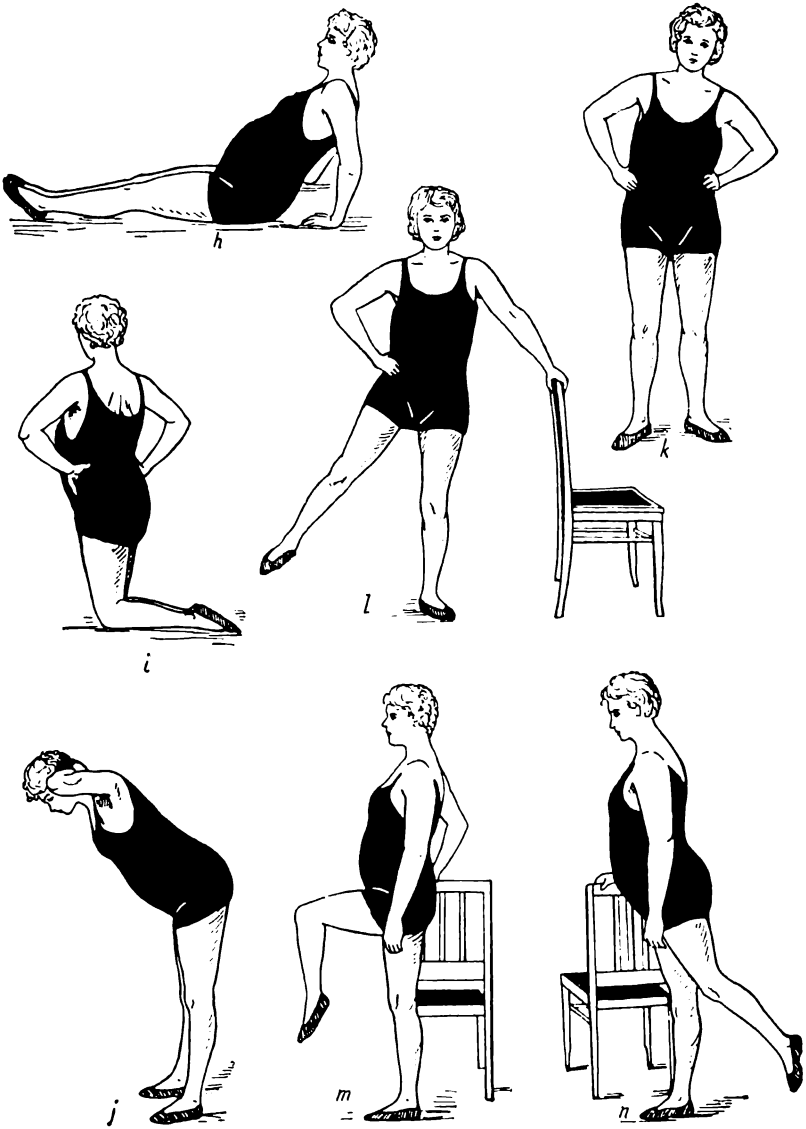


Fig. 79. Set of recommended physical exercises during pregnancy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Exercise 2 (Fig. 79 b). Breathing exercise on the knees. Inhale, while slowly abducting the extended arms; exhale, slowly returning the arms to the initial position of extension in front of the body.

Exercise 3. Breathing exercise in an upright position. Inhale, while slowly raising the arms to shoulder level; exhale, slowly dropping the arms.

Exercise 4 (Fig. 79 c). Exercise for the muscles of the pelvic floor (and partly for the muscles of the upper and lower limbs); with the aid of the hands move the knees towards each other, resisting with the knees.

Exercise 5 (Fig. 79 d). Move the knees towards each other, resisting this movement with your hands.

Exercise 6 (Fig. 79 e). Raise the body, while inhaling, and lower it, while exhaling.

Exercise 7 (Fig. 79 f). Sitting on a rug, part the legs, while inhaling, and move them towards each other, while exhaling.

Exercise 8 (Fig. 79 g). Standing near the back of a chair do the exercise shown in the picture alternately with each leg. Do not fail to hold on to the back of the chair.

Exercise 9 (Fig. 79 h). From a supine position push up slowly, while inhaling, to the position shown in the picture and then slowly lower the body, while exhaling, to the original position.

Exercise 10 (Fig. 79 i). Standing on the knees, turn the body to one side, while inhaling, and return to the original position, while exhaling. This exercise can also be performed in a standing position.

Exercise 11 (Fig. 79 j). Standing with legs somewhat parted, bend forward, while inhaling, and straighten out, while exhaling. This exercise is not recommended during the last months of pregnancy.

Exercise 12 (Fig. 79 k). Standing with legs somewhat parted, bend sideward and straighten up.

Exercise 13 (Fig. 79 l). Standing near the back of a chair, raise leg sideward, while inhaling, and return leg to initial position, while exhaling. Be sure to hold on to the back of the chair.

Exercise 14. Sitting on a rug, alternately flex the knees, bringing them close to the abdomen, and extend the legs.

Exercise 15 (Fig. 79 m). Raise the leg, while inhaling, and lower the leg, while exhaling. Do not fail to hold on to the back of the chair.

Exercise 16 (Fig. 79 n). Swing leg forward and backward freely, inhale, while the leg is swinging forward, and exhale, while leg is swinging backward.

Exercise 17. Bend forward and straighten up, while in a sitting position.

Exercise 18. Rise on the toes, while inhaling, and return to initial position, while exhaling.

The material presented in this chapter helps to maintain the pregnant woman's organism in a state of so-called physiological equilibrium, which also favours normal development of the fetus.

CHAPTER VII

ASEPSIS AND ANTISEPSIS IN OBSTETRICS

Asepsis and antisepsis play an extraordinarily important part in obstetrics; failure to observe the rules of asepsis and antisepsis in every detail of the work imperils the lives of both mother and child.

The nurse maintains close contact with the pregnant woman, sometimes assists during labour, and takes care of the mother and child after childbirth; if the nurse is untidy, does not observe the rules of personal hygiene in everyday life and does not sufficiently carefully observe the rules of asepsis and antisepsis during work, she may do great harm to the mother and child. The nurse must strictly observe all rules of everyday personal hygiene (cleanliness of the body, care of the hands, hair, teeth and oral cavity, frequent change of underwear, etc.).

In the maternity home and at the home of the parturient woman the nurse must very closely observe all rules of asepsis and antisepsis: she must wash her hands according to established rules, wear a clean dress, clean gown, clean kerchief and a mask.

The nurse must remember that she may become a source of infection, if she has influenza, tonsillitis, furunculosis, erysipelas, purulent discharges from the ears or vagina, etc., if her hands were in contact with pus, feces, earth (tetanus) and other objects contaminated with pathogenic bacteria, if she was in close contact with infectious patients, (scarlet fever, diphtheria, erysipelas), if she works without a mask or in a dirty gown, or in a gown in which she delivered the baby of a woman with pyrexia, and if

she administers aid without first thoroughly preparing her hands.

Failure to observe the rules of asepsis and antisepsis affects not only the woman to whom the midwife or nurse administers aid, but in a maternity home also to dozens of other women with whom this midwife or nurse probably had no direct contact. This is the special feature of asepsis and antisepsis in obstetrics, which in some measure distinguishes them from the asepsis and antisepsis in surgery; the slightest remissness, sometimes insignificant at first sight, may lead to high morbidity and even mortality among the mothers and, especially, the newborn.

After childbirth the wound surface of the vagina and uterus remains open for many days and presents an open gate through which infection very easily gains entrance into the maternal organism. Infection penetrates still more easily into the organism of the newborn through the umbilical stump, the respiratory tract and skin.

During preantiseptic times the mortality due to puerperal diseases was extraordinarily high among mothers. Epidemics of so-called puerperal fever broke out in maternity homes with sometimes only one woman surviving out of twenty. At times severe epidemics of puerperal fever raged even in the best Russian and European clinics, for which reason these institutions closed down and did not function for several months on end. The large maternity institutions, for example, the former Moscow Obstetric Hospital, had special reserve barracks to which all the work was transferred whenever an epidemic of puerperal fever occurred in the main building.

The disease incidence and mortality increased particularly noticeably at the time when medical students, who simultaneously studied anatomy on corpses, came to the maternity department for practice. Semmelweiß, a Hungarian scientist, was the first to notice this circumstance. He compared the disease incidence and mortality in two departments, of which the medical students were working only in one. The morbidity and mortality were high in both departments, but the mortality was five times as high in the one frequented by the students. This persuaded Semmelweiß that the hands of the students examining the women

were the source of the grave puerperal diseases; he ascertained that the puerperal diseases were caused by penetration of pathogenic bacteria into the female genitalia through open blood vessels and ruptures in the tissues of the birth canal. On the basis of his observations Semmelweiß first introduced handwashing with chlorine water in 1861. Even this, in our opinion, primitive method of treating the hands enabled him to reduce mortality to 5 per cent. For that time that was an enormous achievement.

Semmelweiß's brilliant discovery, like a number of discoveries of other scientists of that time, was not only rejected, but was even ridiculed. Although Semmelweiß was convinced that he was right, he did not live to witness the triumph of his ideas. Twenty more years had elapsed and only when Lister introduced antisepsis (use of strong disinfectants, for example, carbolic acid) was the teaching of Semmelweiß, the originator of this method, recalled.

As a result of using the Semmelweiß and Lister methods the puerperal disease incidence and, especially, mortality, considerably decreased, although it still remained quite high, and this circumstance stimulated medical thought to search for more perfect agents.

The next stage in controlling wound infections was asepsis which aimed at preventing not only bacteria, but also their spores, from gaining entrance into the wound. For this purpose the dressing material, instruments, linens and other things used in the care of patients are disinfected by sterilisation through boiling or in an autoclave.

In Russia asepsis and antisepsis were first introduced by the famous surgeon N. Pirogov and his pupil, obstetrician and gynecologist A. Krassovsky.

With the introduction of asepsis into obstetrics the puerperal disease incidence and mortality were sharply reduced.

HAND-SCRUBBING

Cleanliness of the hands, as well as cleanliness of the whole body, is the main and most important rule, and without strictly observing it, neither physician nor midwife or nurse of the maternity home have any right to administer aid during and after childbirth.

Whatever method of hand-scrubbing the nurse may use, she must know that it is necessary to wash the hands very often and very thoroughly, using disinfectants, and that if the hands are not constantly cared for, fissures on the skin are likely to form and the epidermis may peel. As was already mentioned, the hands must be constantly cared for (they must be washed in a soap lather, coated with glycerin or almond oil and gloved) and must not be contaminated with pus. Work with rings on the fingers and bracelets on the wrists is not allowed because they harbour a lot of bacteria; the finger-nails must not be painted.

Whatever the method of hand-scrubbing, it is necessary, first of all, to trim the nails short and to clean the subungual spaces. The sleeves of the gown must be rolled up above the elbows so that they do not get wet during hand-scrubbing.

Two methods of hand-scrubbing are predominantly used in obstetrical practice.

The Fürbringer method (somewhat modified). Under a stream of running warm water the hands and forearms are scrubbed with soap and a sterile brush for five minutes. Following this the hands and forearms (halfway to the elbows) are scrubbed with soup and another brush for 10 minutes, after which the hands are dried with a sterile towel and thoroughly rubbed down with alcohol. The fingertips are painted with iodine. After scrubbing the hands in this manner it is desirable to don sterile gloves.

The Spasokukotsky method. The hands are scrubbed for 2-3 minutes with running warm water and soap with the aid of a sterile brush. Then enough of a 0.5 per cent ammonia water solution to immerse both hands and the lower third of the forearms is poured from a bottle within reach into a sterilised enamelled basin used only for hand-scrubbing. In this solution the hands are scrubbed for 3 minutes with the aid of a sterile gauze napkin; the subungual spaces are scrubbed particularly carefully. Following this the attendant pours the solution out of the basin, rinses the basin with a fresh solution, pours this solution out and pours in again the same amount of a fresh solution as the first time. The nurse continues to scrub her hands in this solution for another 3 minutes, after which the hands are

dried with sterile gauze and are rubbed down with alcohol.

Since labour is managed for a long time—sometimes for an hour and even longer—it is best to put on sterile gloves even after such hand-scrubbing.

NURSE'S WORKING CLOTHES

The nurse must wear an easily washable calico *dress*, this dress must be worn only during work and must be kept in the maternity home.

The *gown* worn by the nurse during labour must be not only clean, but also fresh. If no fresh gown is available, it is best to tie a clean sterile sheet over the shoulders or put on a special clean oilcloth apron over the gown.

The *kerchief* worn on the head must be clean and must cover all the hair.

A *mask* is worn, as a rule, during labour and for work in the postpartum and children's wards. The mask is used to protect the female genitalia against penetration of microbes from the oral and nasal cavities (droplet infection). It is made of white calico or three layers of gauze. The mask must cover the mouth and nose, leaving enough room on the sides for admission of air; it is held in place by four strings, the upper strings being fastened over the ears and the lower ones on the neck. A *fresh* sterile mask must be worn for each parturition. If the nurse works in a mask all day, she must *change it at least twice a day*. The mask soils very rapidly and for this reason the nurse may not grasp it with the hands, pull it on and off the nose, and especially remove it, or place it in the pocket of the gown and then put it on again, because such use of the mask is more likely to spread infection than work without a mask.

The *clean linens* are kept in a special closed locker and the sterile linens in large drums. It is desirable to spread only sterile sheets under parturient women.

STERILISATION OF BRUSHES AND BEDPANS

Brushes for hand-scrubbing are sterilised by usual boiling in a steriliser for 10 minutes; the first time new brushes are boiled for a period of one hour. After boiling, the

water is poured out and the brushes are kept in the same steriliser. The brushes may not be taken out of a steriliser or other sterile vessel by hand, but must be handled with sterile forceps kept in alcohol.

A special pan for used brushes must be kept near the washstand.

Sterilisation of bedpans is absolutely indispensable. An insufficiently clean bedpan, not sterilised beforehand, may become a source of a grave puerperal disease even if it was theretofore used by a healthy woman. Every parturient woman or puerpera must have an individual bedpan as long as she is in the maternity home.

Usually bedpans are washed with running water and boiled in a zinc tank for 15 minutes, following which they are immediately used or placed in sterile bags. Each time after bedpans are used they are carefully washed with running water and rinsed with a disinfectant (2 per cent chloramine solution, lysoform).

SCRUBBING THE OILCLOTHS

The parturient woman or puerpera usually lies on a diaper which is spread over an oilcloth 1 m^2. Each time the woman makes her toilet the diaper is replaced by a clean and sometimes even sterile diaper, while the oilcloth is scrubbed and dried beforehand.

Special attention must be devoted to scrubbing the oilcloths after the discharge of the puerperas. A special washroom in the maternity home is equipped with a marble slab or a board coated with galvanised iron (Fig. 80), and has running hot water; the same room has a stand or a special installation for drying the oilcloths. The oilcloths are rinsed with water and thoroughly scrubbed with liquid soap and a sterile brush or sponge. At first one side of the oilcloth is scrubbed and rinsed with a disinfectant, then the marble slab or board is scrubbed and the other side of the oilcloth is similarly scrubbed on it. After such scrubbing the oilcloth is dried on the stand and is kept in a clean diaper or bag until it is issued to a parturient woman or puerpera.

Wherever there is no special board, the oilcloths have to be scrubbed on the beds with warm water and soap and a sterile sponge; thoroughly scrubbed oilcloths are rubbed down with a disinfectant and dried on a clean cross-bar.

Fig. 80. Washing the oilcloths on a special board (with a sterile brush or sterile sponge)

Strictest observance of the rules of personal hygiene, asepsis and antisepsis by the nurse, proper organisation of admission of pregnant and parturient women, sanitary preparation of the parturient women, appropriate distribution of the admitted parturient women through the different departments, proper care of the mother and the newborn, timely and reliable isolation of the sick, timely issuance of sterile linens, thorough scrubbing of oilcloths, cleanliness of the premises, boiling of the bedpans, systematic airing of the wards and obligatory periodic medical examinations of the personnel are all aimed at maintaining asepsis and antisepsis on the necessary level, and nowhere are these factors of such decisive importance as they are in an obstetric hospital.

Asepsis and antisepsis are aimed mainly at preventing and controlling infection. It is necessary to disinfect everything with which the pregnant woman admitted to the maternity home, the parturient woman, puerpera and the newborn have to come in contact.

Infection may gain entrance into the woman's genitalia from her hands, skin or distant organs, but sometimes it is found in the genitalia already before childbirth.

The maternity health centre aims to inculcate hygienic habits in the pregnant woman, acquaint her with elementary

rules of antisepsis and organisation of an appropriate regimen at home and at work, to build up her health and enhance the resistance of her organism.

THERAPEUTIC-PROTECTIVE REGIMEN

In addition to asepsis and antisepsis in the care of the pregnant and parturient woman, the puerpera and gynecological patient, good results in the work of an obstetric and gynecological institution in great measure depend on the behaviour of the personnel and the relations between the personnel and the patient. The word, speech—the second signalling system—is a natural conditioned stimulus. Acting as a conditioned stimulus through the cerebral cortex the word may under certain conditions produce in the organism extremely fine physiological and biochemical changes. It is therefore necessary to speak to patients skilfully, cautiously and considerately. The word must in its own way be "sterile". While talking to a woman and preparing to answer the questions, the nurse must remember that the neuropsychic state of the parturient woman or patient largely depends on her faith in the favourable course and outcome of labour, in her rapid recovery. It is necessary to maintain in the pregnant or parturient woman, puerpera or gynecological patient a conviction that in the given medical establishment everybody is interested in her and is confident of safe parturition and rapid recovery.

A proper regimen of waking and sleep is particularly important; good sleep also favours quicker recovery. Elimination of noise and other stimuli in the corridors and wards is extraordinarily important in the care of the patient.

Thus, in addition to generally accepted asepsis and antisepsis, the therapeutic-protective regimen includes a number of carefully thought-out measures; these consist in a quiet atmosphere, "sterility" of the word, exclusion of hustling and bustling from the work of the entire personnel, timely and painless administration of all prescriptions, considerate satisfaction of all of the patient's needs, a calm and even tone in addressing the patient, concern for cleanliness in the wards, clean linens, palatable food, etc. Organisation and maintenance of a therapeutic-protective regimen is the most important part of the nurse's work.

CHAPTER VIII

PARTURITION AND MANAGEMENT OF THE PARTURIENT WOMAN

ADMISSION AND PREPARATION OF THE PARTURIENT WOMAN

Irregular weak contractions of the uterus appear at the end of pregnancy and develop into regular and more intense labour pangs. The beginning of regular pangs is considered the onset of labour. It is in this condition that the woman, referred to as a parturient woman, is usually admitted to a maternity home.

In the pre-examination room the parturient woman undresses and her temperature is measured. If the temperature is normal, there are no signs of disease (redness or films in the throat, furuncles on the body) and it is established that the parturient woman has had no contact with contagious patients, she is given a clean nightgown and slippers and sent to the examination room of the normal obstetric department for sanitary preparation. But, if the parturient woman is found to have pyrexia or signs of some disease, she is sent to the examination room of the second (dubious) obstetric department. Thus the pre-examination room of the maternity home is actually a separation room, a *filter*. Distribution of parturient women through departments is very important; it constitutes the main factor in preventing the spread of diseases among parturient women.

All of the parturient women's clothes are returned to the person who has brought her to the maternity home or are placed in a special clean bag and after disinfection are kept in a special room of the maternity home. The par-

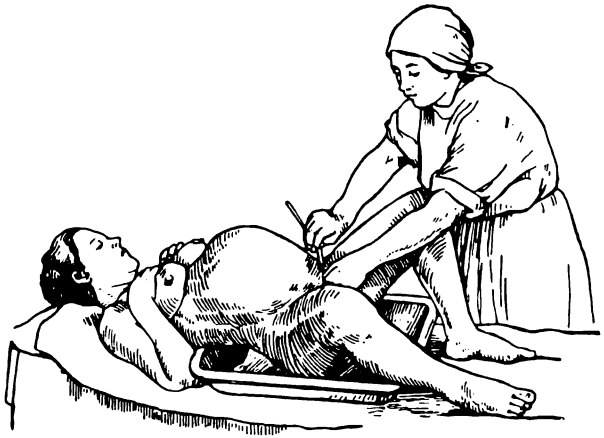


Fig. 81. Shaving the hair on the external genitalia upon admission of the parturient woman to the maternity home

Fig. 82. Parturient woman taking a shower

turient woman's case history is recorded on a special card; the records include her name, address, date of admission to the maternity home, occupation, age and certain other information. In addition, the physician records on the card the data furnished by the obstetric and general examination of the woman.

After this the woman's sanitary preparation begins in the following sequence:

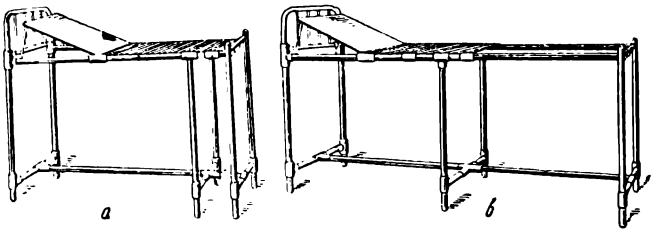


Fig. 83. Rakhmanov's labour bed
a—folded; b—unfolded

1. The parturient woman is placed on a couch. The midwife, carefully washes her hands, rubs them down with alcohol and then lathers the woman's external genitalia and carefully shaves the hair from them (Fig. 81). The razor must be disinfected.

Following this the external genitalia are washed with warm water containing some disinfectant (potassium permanganate, lysoform), after which the woman's urine is taken for analysis.

2. The woman is administered an enema. At this time the nurse must necessarily be at the woman's side because of the possibility that the child may be born during defecation.

3. The nails on the fingers and toes are trimmed.

4. The woman is weighed and her height is measured (see Fig. 70 and 71).

5. The woman is sent to the shower-room where she washes herself (Fig. 82) or is washed by an attendant with soap and a sterile sponge. Wherever there is no shower, the parturient woman washes herself standing or sitting on a

clean stool or bench placed in a bath-tub. The water is poured by the attendant from a special pitcher. If insects are found in the parturient woman's hair the latter must either be clipped or thoroughly washed with a sabadilla solution and combed; in such cases this is recorded on the card so that the woman may subsequently be kept under special observation.

After ascertaining the parturient woman's records the midwife takes the woman dressed in clean underwear to the antepartum ward or to the labour room, depending on her condition.

In the labour room the woman is placed on a special bed (Fig. 83) and is carefully watched, the character and frequency of her pangs being recorded.

COURSE OF LABOUR

Labour consists of three stages : 1) *dilatation stage*, 3) *expulsion stage*, and 3) *placental stage*.

Dilatation Stage

The first stage of labour actually begins with the first pangs and ends in effacement of the cervical canal and complete dilatation of the external os uteri.

Effacement of the cervical canal implies a process during which the cervical canal gradually shortens and finally seems completely to disappear, i.e., the cervix becomes effaced and the walls of the former cervical canal merge with the walls of the corpus uteri, forming one common cavity.

The contractions of the uterine muscles—pangs—help to efface and dilate the cervix uteri; a considerable part in effacing and dilating the cervix is played by the fetal sac, wedging into the cervical canal, and the descending presenting part of the fetus.

In normal labour the dilatation stage of primiparas lasts 16-18 hours and in multiparas—10-12 hours. During complete or almost complete dilatation of the os uteri (a palm-

wide dilatation is considered complete) the fetal sac usually protrudes into the vagina, tenses and during one of the subsequent pangs breaks. In most cases the fetal sac breaks during complete effacement and sufficient dilatation of the os uteri.

Expulsion Stage

During this stage of labour uterine contractions (pangs) are also observed, but to these are now added contractions of the abdominal muscles, i.e., muscles of the anterior abdominal wall, back, diaphragm and pelvic floor; simultaneous contractions of all the aforesaid muscles are referred to as *straining* (the woman strains).

With the fetus in a longitudinal position, cephalic presentation is observed in 97 per cent of the cases. To understand the mechanism of labour, it is necessary to have a clear idea of the shape and size of the birth canal and of the head of the mature fetus.

Birth canal. The birth canal is the route traversed by the fetus during birth. The canal has the shape of a curved tube.

Three parts are distinguished in this tube:

1) the upper, bony ring formed by the superior rami of the pubis in front, the so-called iliopectineal lines on the sides and the sacropromontory in the rear; this ring forms the *inlet of the minor pelvis* (Fig. 84);

2) the middle part, downwards from the pelvic inlet—the *cavity of the minor pelvis*;

3) the lower part—the *outlet of the minor pelvis.*

The *inlet* of the minor pelvis has the shape of a transverse oval in which the following measurements are distinguished: *transverse* measurement, i.e., the distance between the distant points of the oval, which equals 13 cm, and the *longitudinal* measurement, i.e., the distance between the sacropromontory and the superior border of the symphysis pubis, which equals 11 cm.

The largest measurements in the *cavity of the minor pelvis* are the oblique measurements which equal 12 cm each.

The *outlet* of the minor pelvis (Fig. 85) is limited by four bony points: the inferior border of the *symphysis pu-*

bis above, the *ischial tuberosities* on the sides and the *coccyx* below. Between these points there are several layers of muscles and fascia which enclose the minor pelvis below

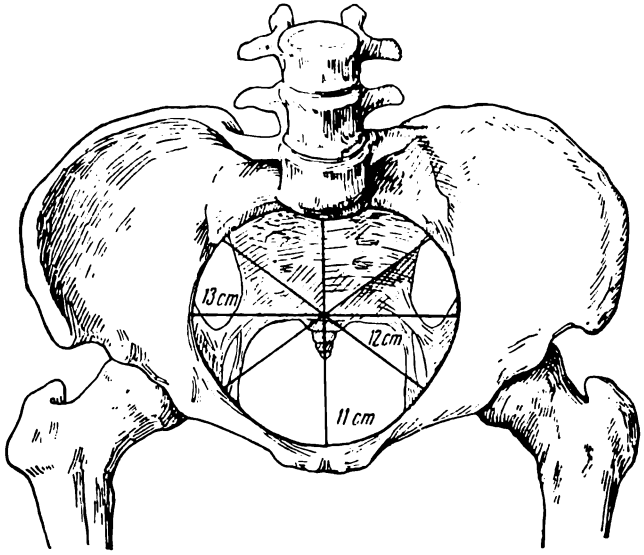


Fig. 84. Female pelvis. The measurements of the pelvic inlet are shown by lines. Longitudinal—11 cm; transverse —13 cm; oblique—12 cm

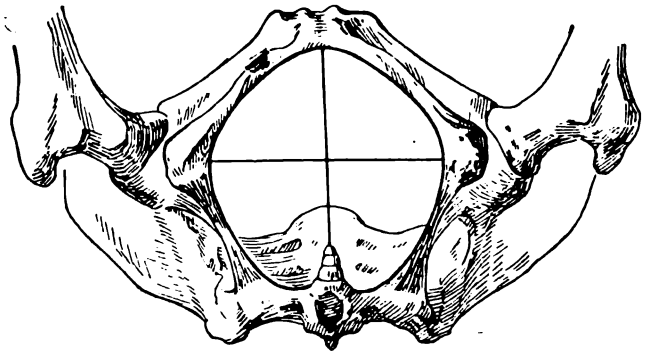


Fig. 85. Outlet of the minor pelvis

and in their aggregate form the pelvic floor and the perineum. The distance between the inferior border of the symphysis and the coccyx is the longitudinal (largest) measurement of the outlet and equals to 9.5 cm. During labour the coccyx is moved to the rear by the pressure of the advancing fetal head and the longitudinal measurement grows to 11 cm.

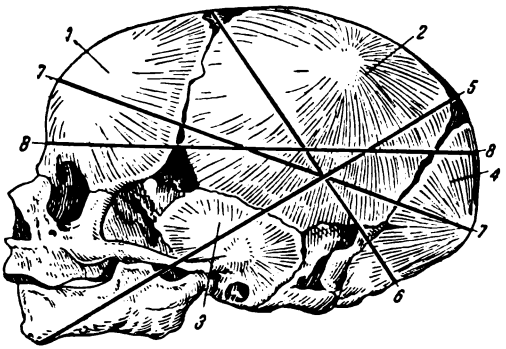


Fig. 86. Cranium of the newborn (side view)
1—frontal bone; 2—parietal bone; 3—temporal bone; 4—occipital bone. The lines show the directions of: 5—greater oblique measurement; 6—lesser oblique measurement; 7—intermediate oblique measurement; 8—longitudinal measurement

Head of mature fetus. The skull (Fig. 86) consists of a vault and base. The cranial vault is formed of two *frontal*, two *temporal*, two *parietal* and one *occipital* bones; the base of the skull is formed of the basic part of the occipital bone and the *basilar* bone.

The cranial bones are joined by *sutures* and *fontanels* which are fibrous membranes.

1. The *sagittal suture* (Fig. 87) runs anteroposteriorly between the parietal bones from the angle of the anterior fontanel to the posterior fontanel.

2. The *frontal suture* forms, as it were, a continuation of the sagittal suture through the anterior fontanel; it runs between the two frontal bones to the bridge of the nose.

3. The *coronal sutures* run in two directions from the sagittal suture between the frontal and parietal bones.

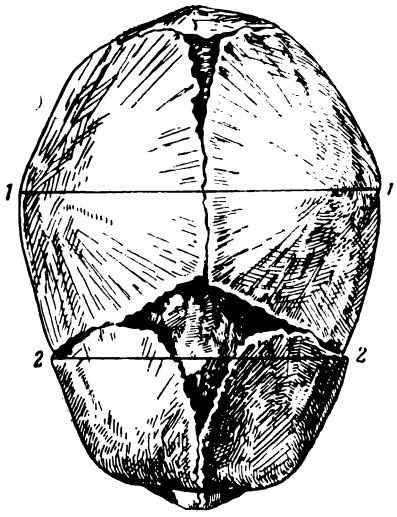


Fig. 87. Sutures and fontanels of the cranial vault (posterior fontanel—top, anterior—bottom)

1-1—greater transverse measurement of the head; 2-2—lesser transverse measurement of the head.

4. The *lambdoid suture* is located at the other end of the sagittal suture, between the parietal bones and the occipital bone.

The *anterior fontanel*—the space between the parietal and frontal bones—has the shape of a rhombus. On palpation the anterior fontanel feels under the finger like a quadrangular figure with a suture issuing from each angle (see Fig. 87).

The *posterior fontanel* is the place where the sagittal and lambdoid sutures join. On palpation the posterior fontanel feels under the finger like the junction of three sutures (see Fig. 87).

The longest and straightest of the sutures is the sagittal suture.

The following are the **measurements of a mature fetal head:**

longitudinal measurement—from the bridge of the nose to the *occipital protuberance*—is 12 cm (Fig. 86 and 87); the circumference of the head around its longitudinal measurement is 34 cm;

the *lesser oblique* measurement—from the centre of the anterior fontanel to the *occipital fossa*—is 9 cm; the circumference of the head around this measurement is 32 cm;

the *greater oblique* measurement—from the chin to the occipital protuberance—is 13 cm; the circumference of the head around this measurement is 40 cm;

the *lesser transverse* measurement—between the distant points of the coronal sutures—is 8 cm;

the *greater transverse* measurement—between the parietal eminences—is 9 cm.

Mechanism of labour. The aggregate and character of movements performed by the presenting head as it goes through the birth canal in accordance with its different measurements are known as the mechanism of labour.

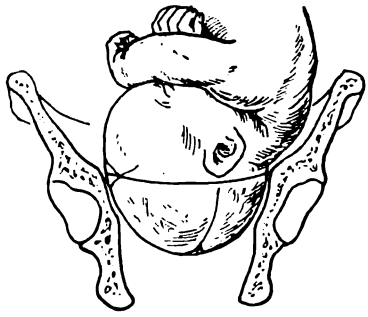


Fig. 88. Fetal head enters the pelvic inlet. The head is flexed, its lesser oblique diameter passing through the transverse diameter of pelvic inlet

As a result of the uterine contractions (pangs) the presenting head descends to the pelvic inlet, establishes itself with its sagittal suture across the inlet and flexes. Drawing the chin to the chest the head enters the minor pelvis (Fig. 88). While still flexed the head passes through the bony ring of the inlet and descends into the pelvic cavity. Under pressure of the continuing uterine contractions the head turns to the oblique measurement of the pelvic cavity (Fig. 89). Descending still lower the head encounters the resistance of the muscles of the pelvic floor, owing to which it flexes still more and simultaneously turns with its sagittal suture to the longitudinal (11 cm) measurement of the outlet (Fig. 90). The pressure of the head against the posterior vaginal wall and, consequently, against the rectum reflexly causes the parturient woman to strain. When the head reaches the inferior border of the symphysis, it rests against it with its suboccipital part and be-

Fig. 89. Progress of the fetal head through the pelvic cavity. The head has turned into the oblique diameter of the pelvic cavity

gins to extend about the symphysis; at first the forehead and then the other parts of the face emerge from under the perineum; this is known as disengagement of the head (Fig. 91).

To disengage from the vaginal entrance with its smallest part, i.e., the lesser oblique measurement, the head must not begin to extend before the occiput emerges from under the symphysis. Only under this condition will the head, extending, pass with its lesser oblique measurement

Fig. 90. The head is passing under the symphysis, its suboccipital part resting against the symphysis. The saggital suture of the head is directed towards the longitudinal diameter of the pelvic outlet. The head is engaging

Fig. 91. The head is disengaging from the vulvar opening. The occiput has emerged from under the symphysis. The head is deflexing, the forehead and other parts of the face emerging from under the perineum

(9 cm) through the longitudinal measurement of the pelvic outlet (11 cm). This must be striven for in managing labour and will be discussed below.

After disengagement from the vaginal entrance the head turns outward (Fig. 92) with its occiput towards the maternal thigh to which the back of the fetus was turned; thus, in this position the disengaged head turns with its occiput to the left maternal thigh, and vice versa, this turn is a result of the internal rotation of the fetal shoulders. In passing through the birth canal the shoulders rotate in a manner analogous to the rotations of the head.

This mechanism of labour is observed most frequently

in cases of occipital presentation; in these cases the fetus is usually in a position with its back forward.

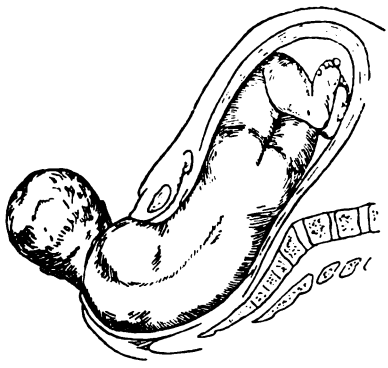


Fig. 92. The born head has turned with its occiput to the maternal thigh (external rotation of the head)

Placental Stage

The placental stage begins immediately after the birth of the child and lasts an average of 30-60 minutes. During this period the placenta and membranes separate from the uterine walls and the afterbirth emerges to the exterior.

CARE OF THE PARTURIENT WOMAN

Care of the parturient woman boils down essentially to setting up a surgically clean atmosphere, strictest observance of the rules of personal hygiene by the personnel and close watching of the parturient woman all through labour. It is necessary, as far as possible, to avoid any intervention, and strictly to observe the rules of asepsis and antisepsis.

Preparation for Labour

Preparation of the Room and Bed

The labour room is usually equipped like an operating room. It is a tall light room; its ceiling and walls are coated with a white oil paint and the floor washes easily (it is either tiled or is covered with linoleum). The furniture of the labour room consists of one or several special beds for parturient women, wheel-table for the instruments and dressing material, and a desk for recording the case history of the parturient women. If the child's first toilet

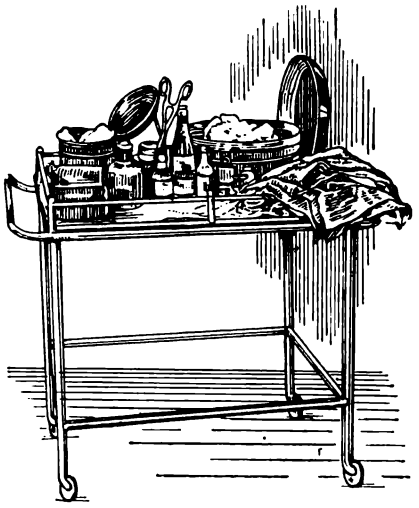


Fig. 93. Wheel-table with the things required for managing labour

is made in the labour room, the latter has a special diapering table. Near each bed there is a table. At the foot of the bed there is a special stand for the bedpan of each parturient woman.

The special Rakhmanov labour bed (see Fig. 83) differs from the usual beds in that it is taller and, by shifting one half of it, it can be transformed into a so-called transverse bed; the mattress consists of two halves—bolsters encased in easily washable oilcloth; the height of the bolsters averages about 25 cm.

The bolsters are covered with a sheet and then an oil cloth measuring 1 sq. m. The latter is covered with a diaper, two pillows are placed at the head of the bed. The whole thing is covered with a light blanket encased in a blanket slip. During labour the foot bolster is removed and the parturient woman finds herself in a position in which her pelvis is located above the bed level, which facilitates access to the external genitalia during labour.

On the wheel-table (Fig. 93) there is always a steriliser with curved umbilical scissors, straight scissors (in case it is necessary to dissect the perineum), and dressing forceps with which the dressing material and cotton are grasped; in a glass jar with a tight-fitting plug there are boiled laces or strings for tying off the umbilical cord; one drum contains sterile gauze, another—sterile cotton, and still another—sterile diapers.

The labour room always has enough hot and cold boiled water. It also has a small medicine chest which contains all the medicinal agents used during labour, namely, quinine, pi-

tuitrin, ergotinine, ergot powders, caffeine, camphor, as well as physiologic saline solution and an apparatus for administering it. The agents used for analgising labour are kept in a separate cabinet. The labour room must also have a table and special bath for reviving the child born in asphyxia.

If a woman has to give birth outside a maternity home, the choice of a room for parturition is an extraordinarily important factor. The largest and lightest room must be set apart for parturition; the superfluous furniture, all soft objects, rugs, bed curtains, etc., must be removed from the room. The walls and ceiling should be dusted and, if possible, the walls should be whitewashed beforehand. The floors are scrubbed with hot water and soap and the room is thoroughly ventilated. All this cleaning must be done by the pregnant woman's relatives or some other persons, but under no circumstances by the person who will deliver the child. The person delivering the child must safeguard his (her) hands against any contamination.

The bed for the parturient woman should be preferably narrow and tall. If there is no such bed, a wooden trestle bed may be used. The bed (or trestle bed) is scrubbed with hot water and soap and is placed so that it is accessible from all sides; it is best to put it in the middle of the room. A mattress—a large clean bag loosely filled with clean fresh straw and covered with an oilcloth is placed on the bed. A clean double sheet and a pillow in a clean pillow-case are placed on the oilcloth. If the sanitary preparation of the parturient woman has to be carried out in the same bed, the bed linens are changed after the preparation again and the parturient woman is covered with a clean sheet and a clean light blanket on top of the sheet.

The person assisting at birth must see to it beforehand that there is enough hot and cold boiled water. The water may be boiled in teakettles or any other utensils. The scissors and material for tying the umbilical cord must also be boiled beforehand; there must likewise be sterile gauze, sterile cotton and 2-3 sterile roller bandages of different width. Iodine and alcohol are prepared and a large basin for the disinfectant is sterilised by heating over an alcohol flame. For childbirth at home the person assisting at birth uses a special *obstetric bag*.

Managing the Dilatation Stage

On admission to the labour room the parturient woman is examined and all the data recorded in the examination room are usually checked, i.e., the period of pregnancy, position of the fetus, the position of the presenting part and the condition of the fetus (presence and character of heartbeats) are determined, the pelvis is measured once

more and the condition of the parturient woman is ascertained (to see if she has any edema, dyspnea, headaches). If no urinalysis was theretofore made, the parturient woman is asked to urinate into a clean bedpan and the urine is analysed. If the results of the examination show everything to be normal, no intervention is attempted and the observation is continued.

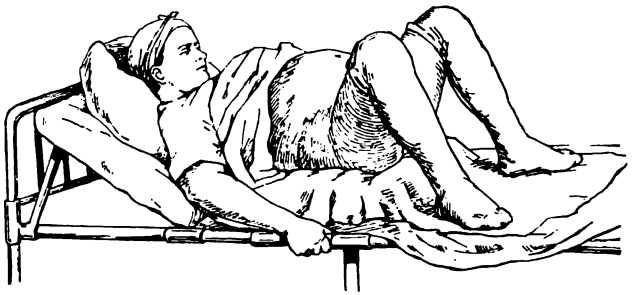


Fig. 94. Parturient woman's position during the expulsion stage

It is necessary to watch the parturient woman's general condition and temperature. After urination and defecation her external genitalia must be washed without fail with clean boiled water or water containing some weak disinfectant (lysoform, potassium permanganate) by means of sterile cotton held with a forceps and not with the hand. During this stage of labour the woman must be given light food and from time to time small amounts of liquid, for example, sweet tea (milk must be avoided because it frequently causes intestinal distention).

It is very important to empty the urinary bladder in good time, for which purpose the parturient woman must be asked to urinate. If she cannot urinate voluntarily, the urine is drained on the physician's prescription with a sterilised (boiled) metal or rubber (soft) catheter. For this purpose the external genitalia are washed with boiled water and disinfected, then the vaginal entrance is opened with the fingers of the left hand and the catheter is introduced into the urethral opening with the right hand (see Fig. 115). Before doing this it is necessary thoroughly to wash the

hands. It is also necessary to watch the functioning of the intestines; if, while in the labour room, the parturient woman has had no stool for 24 hours, she must be administered an enema.

During the dilatation stage, if the waters have not as yet burst and the head of the fetus has entered the inlet, the woman does not necessarily have to stay in bed all the time; she may walk, sit and generally assume any posture in which she feels comfortable. The parturient woman must lie in bed only towards the end of the dilatation stage or from the moment of the bursting of waters; at this time, if the woman is in an upright position, small parts may fall out (arm, umbilical cord), especially, if the presenting part of the fetus is located high.

While observing the character of labour, it is necessary to watch the descent of the presenting part of the fetus. This is done by external palpation of the presenting part and auscultation of the fetal heart. If the presenting part does not descend or if it enters the pelvis very slowly during good labour, it usually indicates a disparity between the sizes of the head and the pelvis (clinically contracted pelvis).

Managing the Expulsion Stage

The second labour stage—the expulsion stage—begins at the moment of complete dilatation and the bursting of the waters. By this time the head of the fetus is usually already in the pelvic cavity. Straining is added to the uterine contractions; the onset of true straining is caused by the pressure of the descended presenting part of the fetus against the rectum and pelvic floor. During this stage it is necessary to watch the character of labour, and, especially, the heartbeats of the fetus. During the expulsion stage the pangs are somewhat shorter than they are during the dilatation stage, but are more frequent and more intense.

With the bursting of waters the capacity of the uterine cavity decreases and the placental blood circulation somewhat worsens; during the pangs it worsens still more because of the compression of the uterine vessels. This is why the expulsion stage requires particular attention and aus-

cultation of the fetal heart every five minutes between the pangs.

With the onset of straining the parturient woman must necessarily lie in bed in a comfortable position, most frequently on her back; the upper part of the body must be slightly raised. Two long towels or special devices, so-called *reins*, the ends of which the parturient woman grasps are fastened to the foot or the middle legs of the labour bed. Flexing her legs in the knee and hip joints the parturient woman presses the soles of her feet into the bed and pulls on the reins, which intensifies the straining. If there are no reins, the parturient woman grasps with her hands the edges of the bed (Fig. 94). During her straining the parturient woman must neither scream nor throw her head back; she must withhold her breath and press the chin against the chest. Very frequently primiparas have to be taught to strain; they are told to strain as they do during defecation.

From the moment the perineum of primiparas begins to protrude sharply under the pressure of the fetal head the person assisting at the birth must be ready for delivery; in cases of multiparas it is necessary to be ready for this from the moment of the bursting of waters.

Aid in labour. To be ready for delivery means to prepare all the necessary, aforementioned things, to place these things on the table standing near the bed and covered with a sterile sheet, and, what is most important, thoroughly to scrub the hands. Clean hands and a clean body are the basic and most important condition, without which nobody has any right to assist at childbirth.

If the woman is giving birth at home and not on a special bed, it is necessary, during the expulsion stage, as soon as the fetal head begins to disengage, to place under the woman's pelvis a home-made bolster, i.e., a small pillow wrapped in several layers of a clean, preferably sterile sheet; such a bolster makes it possible to keep the woman's pelvis high and freely to grasp the perineum without touching the bed. Another pillow is placed under the parturient woman's head and shoulders so that she may be in an almost half-sitting position in which it is easier for her to strain. While the head shows itself in the vaginal en-

trance during the pangs and is retracted during the intervals between the pangs, i.e., engages again, the person assisting at the birth watches (Fig. 95). The moment the head has entered the vaginal orifice and remains in this position after the pang, the *disengagement* of the head begins.

The presenting part of the fetus disengaging through the vaginal entrance greatly stretches with its pressure

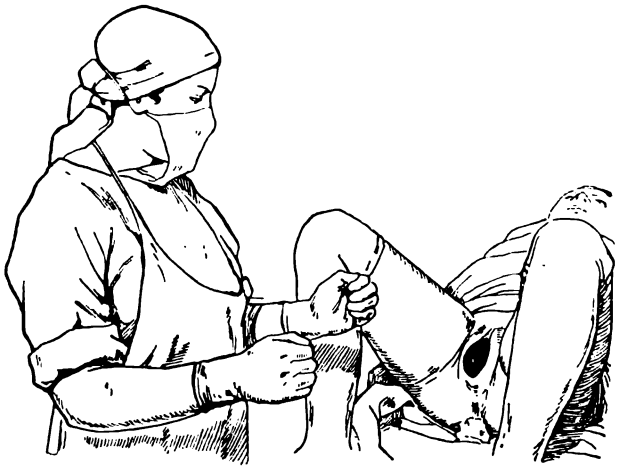


Fig. 95. The fetal head is engaging. The midwife managing labour is watching, ready to administer the necessary aid

the muscles of the pelvic floor, the perineum. Not infrequently, mainly in cases in which the muscles are insufficiently elastic or weakly developed and aid in parturition is improperly administered, the perineum is lacerated.

A well-developed muscular system, including the muscles of the perineum, forms the basis for preventing lacerations of the perineum during childbirth. Physical culture activities from the earliest age, long before pregnancy and during the latter are the most important factor in preventing scars of pregnancy and lacerations of the perineum in childbirth. Qualified assistance at childbirth is also very important for preventing lacerations of the perineum.

The person managing the labour stands to the right of

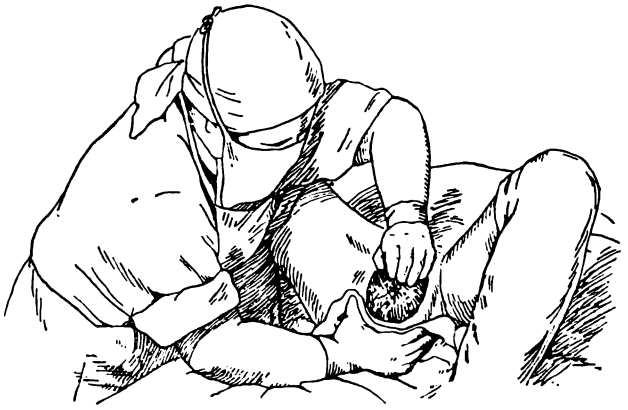


Fig.96. The fetal head is disengaging. The midwife managing labour is impeding the premature deflexion of the head, which prevents perineal lacerations, thus protecting the perineum

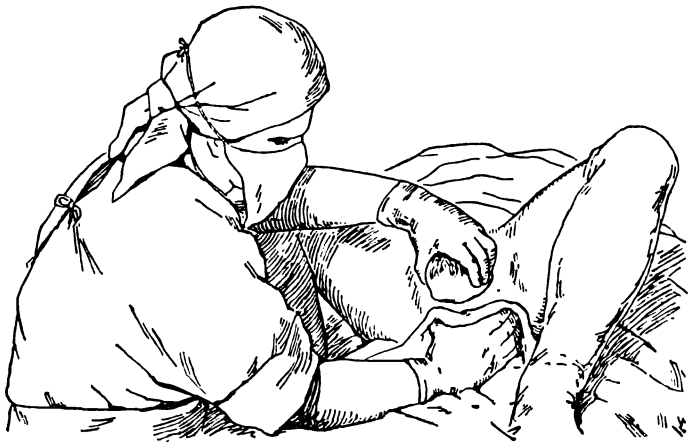


Fig. 97. Releasing the face. The perineum is "removed" from the child's face

the parturient woman, her back towards the woman's head, and places 4 fingers of the left hand on the lower part of the emerging fetal head; during a pang, when the head advances from the vulvar entrance, an attempt is made to retard the premature deflexion of the head, thereby helping the emergence of the occiput from under the symphysis. *Under no circumstances must any pressure with the finger-tips be applied to the head*; the left hand must serve as a kind of stationary obstacle which the advancing head cannot overcome (Fig. 96). As soon as the occiput has emerged from the vaginal orifice, the person assisting at the birth palpates it in her palm, while the parietal eminences are palpated on the sides. At this moment the extraction of the head is begun. The parturient woman is asked not to strain; the emerged part of the head is grasped with the left palm and is carefully and gradually raised, while the perineum is firmly grasped with the right palm (thumb abducted) as shown in Fig. 97, and is carefully removed from the head which is being raised; while this is being done, the forehead appears from under the perineum first and is followed by the nose, mouth and, lastly, the chin; traction must necessarily be applied to the head until the perineum slips off the chin and the latter emerges to the exterior. All this must be done outside of pangs; it is very difficult to extract the head slowly during a pang; moreover, rapid extraction leads to laceration of the perineum.

Fig. 98. The loop of the umbilical cord wound around the child's neck is removed over the head

The person assisting at the birth runs a finger over the fetal neck to the shoulders to check if the umbilical cord has wound itself around the neck and, if it has, carefully removes the loop of the umbilical cord over the head (Fig.98).

The emerged head, as was already mentioned, usually turns with its occiput towards the mother's thigh (see

Fig. 99. The upper shoulder is directed under the symphysis pubis

Fig. 92). If the head does not make this turn spontaneously, it is made by the person delivering the child. To do this, the head is grasped between both palms, one palm holding the chin and the other the occiput, or the palms are placed on the temporogenal surfaces (Fig. 99) and the head is carefully turned with its occiput in the direction of the *position* (of the back); of course, the position of the fetus must be known in advance, before the beginning of the expulsion stage. While thus turning the head, the person assisting at the birth simultaneously draws it downward (see Fig. 99) and thereby brings the upper shoulder under the symphysis pubis.

Then the person delivering the child brings his (her) left hand around the head of the fetus so that his (her) palm rests under the lower cheek (Fig. 100), raises the head and very carefully presses the emerged shoulder against the symphysis; with the right hand he (she) carefully removes the perineum from the lower shoulder, as he (she) removed it while extracting the head. As soon as both shoulders and half of the chest have emerged, the child is carefully grasped under the armpits, is raised and removed from the birth canal (Figs. 101 and 102).

The newborn child is placed between the mother's legs on a warm sterile diaper folded in four and is covered with it. The superfluous pillows are removed from the parturient woman's head and the woman is placed in a horizontal position. The person assisting at the birth washes his (her) hands and rubs them down with alcohol; in urgent cases the hands are washed with mercury bichloride and then with alcohol, and measures to prevent *ophthalmoblennorrhea* by the Matveyev method are immediately carried out (Fig. 103).

It should be remembered that, while going through the

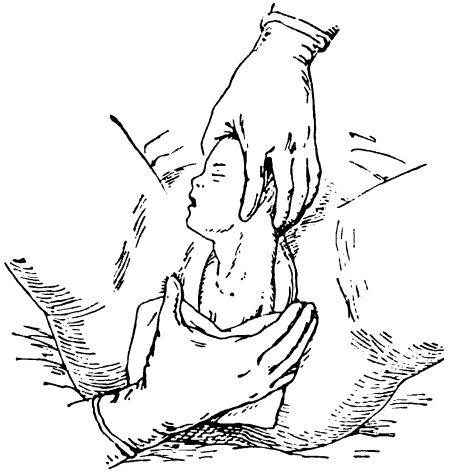


Fig. 100. Extraction of the lower shoulder with simultaneous support of the perineum

Fig. 101. The child is grasped under the armpits and raised, its body thus being extracted from the parturient canal

Fig. 102. Born child in the hands of the person assisting at labour

Fig. 103. Prevention of ophthalmoblennorrhe

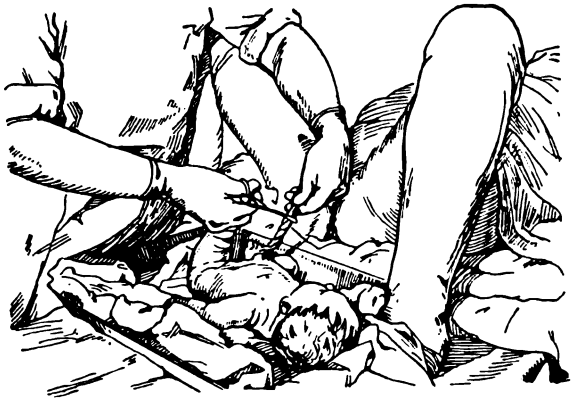


Fig. 104. The first clamp is applied to the umbilical cord; then the second clamp is applied somewhat farther

Fig. 105. The umbilical cord is cut between the clamps with a sterile, curved scissors

maternal birth canal, the child may have contracted gonorrhea. Gonorrheal pus can gain entrance into the newborn child's eyes and subsequently provoke the disease which not infrequently leads to blindness. To avoid this, the prophylactic method, which consists in the following, is used in all cases without exception: the eyelids are swabbed with a sterile cotton, and are then carefully separated and slightly turned out with the fingers of the left hand (see Fig. 103); after this one drop of a 2 per cent silver nitrate solution (the solution must be fresh, for which purpose it has to be changed every other day) is applied with a pipette to the mucosa of the everted lids. Since this method was introduced into practice, no gonorrheal affections of the newborn children's eyes have been observed. The use of the aforesaid method is obligatory in all cases of childbirth.

Tying and cutting the umbilical cord. As soon as the pulsation of the vessels of the umbilical cord ceases, the latter is tied with heavy surgical silk or, preferably, with a thin sterile gauze lace, or else sterile metal clamps are applied—one at a distance of 10 cm from the umbilical ring and the other somewhat farther away (Fig. 104). Between the ligatures, clamps or clips the umbilical cord is rubbed down with a sterile gauze soaked in 95 per cent alcohol (the gauze is grasped with a sterile forceps) and is carefully cut with sterilised (boiled) curved scissors (Fig. 105) so as not to injure the child. A sterile gauze napkin is applied to the exposed fetal end of the umbilical cord. A thin thread must not be used for tying the umbilical cord because it may cut the latter together with its vessels. Oilcloth bracelets are immediately put on both the child's wrists (Fig. 106) with the child's sex, its mother's name and the number of the case history inscribed on the bracelets. Then the child is shown to the mother and the latter is told whether it is a boy or a girl.

The maternal end of the umbilical cord is covered with cotton or gauze, the part of the cord remaining outside hanging down into a basin in which the blood running out during the placental period is collected. The sheet and oilcloth spread under the parturient woman are changed and, if there is no hemorrhage, the woman is covered with

a sheet and blanket, and is left alone. Very frequently the parturient woman develops chills at this time, for which reason she is covered with one more blanket. The child's sex and the time of its birth are immediately recorded in the case history.

Fig. 106. A sterile oilcloth bracelet is placed on the child's wrist.

Directly after the umbilical cord has been tied the child is wrapped up in a warm sterile diaper. If no sterile diaper is available, the child is wrapped up in a clean warm napkin (pressed with a hot iron), covered with a clean blanket and placed on the swaddling table.

Managing the Placental Stage

During the placental stage the parturient woman must not be left alone for a single moment. If all is well, i.e., there is neither external nor internal hemorrhage (the latter is determined by the condition of the pulse which is quick

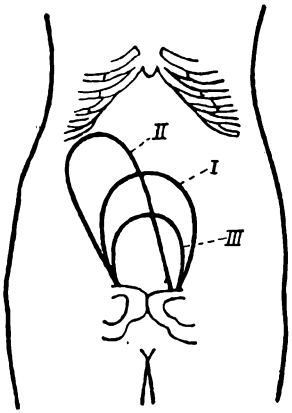


Fig. 107. Outlines of the uterus during the placental stage

I—after birth of the fetus, II—after separation of the placenta and its descent into the vagina; III—after birth of the placenta

and weak during internal hemorrhages) and the parturient woman is in good general condition, several minutes may be devoted to the child's toilet (see p. 202).

During the placental stage it is necessary to watch the parturient woman's condition, the appearance of pangs, the changes in the shape of the uterus and the height of location of its fundus (Fig. 107). The uterus must under no circumstances be touched with the hands without special indications, since any mechanical stimulation of the uterus affects the placental stage and not infrequently leads to placental hemorrhages.

As regards the frequency of complications the placental stage is extraordinarily important. The severe complications observed in the form of hemorrhages at this stage require immediate aid without which the parturient woman's life is sometimes in jeopardy. At the same time many grave complications of the placental stage may be avoided if the latter is properly managed.

Immediately after the birth of the child the uterus, freed from the fetus, considerably contracts and its fundus descends to the level of the navel; at this time the uterus is soft. The woman lies quietly with an even and slow pulse, and neither pains nor hemorrhages. Within 10-15 minutes pains appear at the bottom of the abdomen and the woman declares that her pangs have

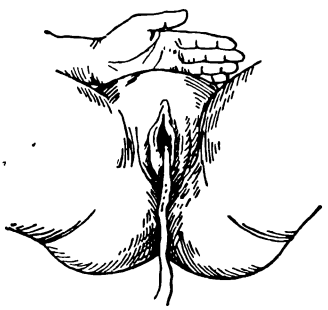


Fig. 108.
If the placenta has emerged from the uterus, the umbilical cord is not retracted into the vagina when pressure with the side of the hand is applied over the sumphysis

recurred. These are panglike uterine contractions which lead to the separation of the placenta. The uterus grows longer and narrower, its fundus rises higher and higher and sometimes reaches the hypochondrium (Fig. 107). During this stage there is a slight hemorrhage which normally does not exceed 250 ml.

If the loss of blood does not exceed the aforesaid figure, the placental stage must be managed strictly temporising-

Fig. 109. The abdominal wall is folded and grasped with both hands, and, if the woman strains (bears down) at the same time, this helps considerably to increase the intra-abdominal pressure

ly. If the placenta is still in the uterus and there is no hemorrhage, the woman is left alone without any interference, the person assisting at the birth waiting for the spontaneous disengagement of the placenta, but if the placenta has emerged from the uterus and lies in the vagina, it must be removed.

The fact that the placenta has already become separated and is in the vagina can be ascertained by pressure with

the side of the hand above the symphysis (Fig. 108). If the placenta has emerged from the uterus, the umbilical cord is not drawn into the vagina during the application of pressure. The woman is asked to strain and if the placenta does not come out at this time, the abdominal wall is folded and grasped with the hands, as shown in Fig. 109, and the woman is asked to strain again. But if this also

Fig. 110. Expression of the placenta, which has separated from the uterine wall, by the Credé-Lazarevich method

proves ineffective and the placenta is really in the vagina, it is expressed by a physician or midwife using the Credé-Lazarevich method (Fig. 110).

The placenta emerging from the vagina is grasped with cleanly-washed hands, as shown in Fig. 111, and is slowly twisted in one direction (the membranes are twisted into a rope). This must be done in order completely to remove the membranes by gradually separating them from the uterine walls, otherwise part of the membranes may be severed and will remain in the uterus.

In some cases it is possible completely to remove the membranes without in any way touching them with the

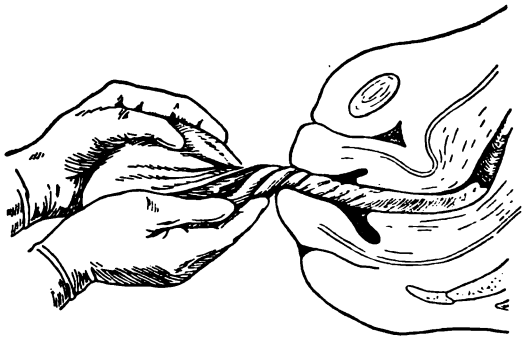


Fig. 111. The placenta is wound into its membranes; by careful rotatory movements the membranes are twisted into a rope

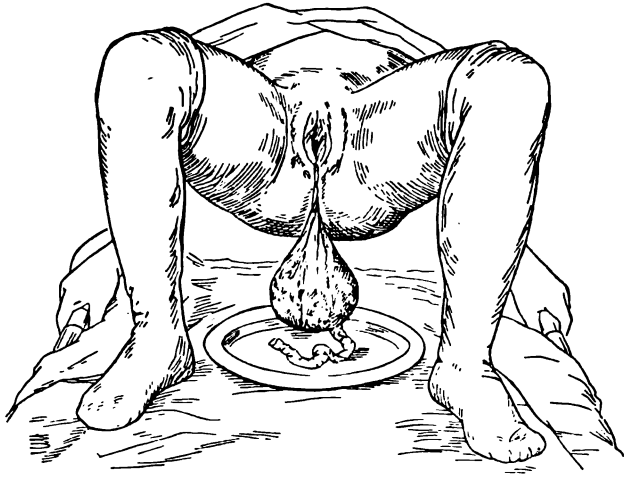


Fig. 112. Resting on her feet the woman raises her pelvis high so that the emerged placenta hangs down and separate the membranes by the force of its own weight

hands, for which purpose, as soon as the placenta entwined in the membranes has emerged from the vagina, the parturient woman is asked to raise her pelvis and the placenta will then completely separate the membranes by the force of its own weight (Fig. 112).

Examination of the placenta and membranes. After the emergence of the placenta, i.e., the afterbirth with the

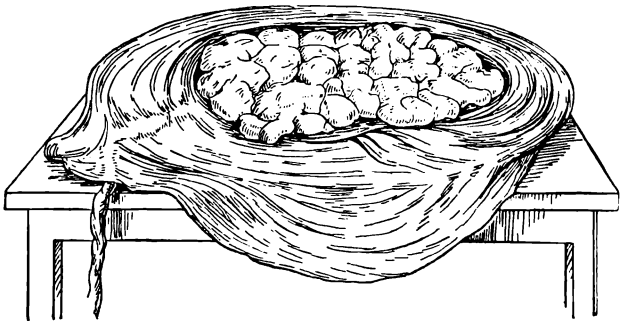


Fig. 113. Examination of the placenta. The placenta is placed with its fetal side on a table, is freed of its membranes, and the maternal side is examined

umbilical cord and membranes, it is necessary carefully to examine them and ascertain their integrity (Figs. 113 and 114). If a placental lobule is missing, it has to be removed from the uterine cavity manually (this is done by a physician or midwife) or instrumentally (this can be done only by a physician). After the emergence of the placenta the puerpera's external genitalia are carefully washed with a disinfectant (1 tablespoonful of a 1 per cent potassium permanganate solution per 1 litre of boiled water). Then the vaginal entrance is examined to see if there are no lacerations of the perineum or the mucosa of the vaginal entrance. Perineal lacerations are infallibly sutured. This must be done by a physician or in the last resort by a midwife.

After labour the woman usually remains for 2-3 hours in the labour room. The reason for it is that during the first hours following the emergence of the placenta hemor-

rhages are possible *and the puerpera can be watched best in the labour room.* The puerpera is given a clean nightgown, her bed linens are changed, and she is covered with a blanket and left alone. At the same time her pulse, condition of the uterus and the discharges are watched. After normal parturition the pulse is usually slow and full, the uterus is compact and well contracted, and the bloody discharges are insignificant.

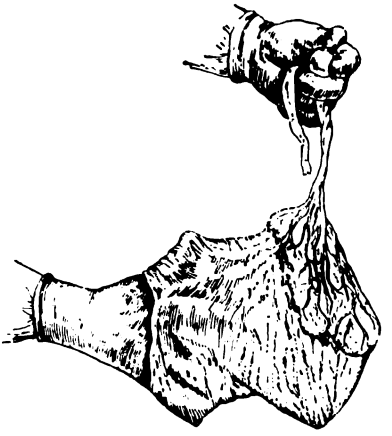


Fig. 114.
Examination of the membranes. The umbilical cord is held in one hand, the other hand is introduced into the opening in the membranes and the latter are examined

At this time it is well to give the puerpera hot tea or coffee. Within 2-3 hours, if everything is normal, the puerpera is transferred to the postpartum ward and her case history is also sent there. The ward nurse who receives the case history checks it to see if it is signed by a physician. This is important in order to make sure that the physician has examined the puerpera, believes that all is well, and at the same time has checked the case history.

Analgising Labour

Above it was mentioned (page 24) that at the maternity health centre the pregnant women receive psychoprophylactic preparation for childbirth. In the overwhelming majority of cases this preparation suffices for almost painless childbirth. Unfortunately, not all pregnant women visit the maternity health centre regularly and some of them are therefore admitted to maternity homes without the aforesaid preparation. In these cases drugs must sometimes be used to analgise labour.

The analgesics are administered in the form of inhalation (nitrous oxide), per os, subcutaneously and in the form of enemas; some analgesics are administered intravenously. The analgesics are usually given during the dilatation stage when the external os uteri has already dilated 2-3 digits and the waters have not yet burst.

Superficial ether or nitrous oxide anesthesia is produced during the expulsion period, at the moment of the disengagement of the fetal head. Drug analgesics are administered by a physician or midwife, if the latter works by herself (collective farm maternity home).

CHAPTER IX

PUERPERIUM AND CARE OF THE PUERPERA

NORMAL PUERPERIUM

The puerperium begins immediately after the expulsion of the placenta.

Involution of the Uterus

During the puerperium the puerpera's genitalia undergo retrograde development, i.e., they gradually return to their usual state.

After separation of the placenta the uterine cavity presents a kind of wound surface which is easily infected by bacteria gaining entrance into it from the vagina.

The basic condition for preventing puerperal diseases is qualified obstetric aid with strictest observance of the rules of asepsis and antisepsis.

Immediately after delivery the fundus uteri is located on the level of the navel; with each passing day the uterus contracts and increasingly descends. Thus, during the first day following delivery the fundus uteri is on the level of the navel, during the second day it is on the same level, during the third day it is one digit below the navel, on the fourth day—2-3 digits below the navel, on the fifth day it is halfway between the navel and the symphysis pubis, on the sixth day it is another 1-2 digits lower, on the seventh day it is 3 digits above the symphysis pubis and on the eighth day—2 digits above the symphysis pubis. Gradually,

by the tenth-twelfth day after delivery, the fundus uteri is hidden behind the symphysis pubis.

Measurements of the height of the fundus uteri above the symphysis pubis have shown that with each passing day after childbirth the uterus becomes approximately 1 cm shorter.

The height of the fundus uteri must be measured when the urinary bladder is empty; a replete urinary bladder displaces the fundus uteri upward, owing to which a wrong impression of uterine contraction may be gathered. This detail is extraordinarily important and must not be overlooked; the nurse must see to it that all puerperas urinate without fail before the regular rounds of the physician. The uterus grows shorter and simultaneously narrower.

Lochia

The process of healing and restoration of the uterine mucosa is attended with a discharge of large amounts of a "wound" secretion which is known as *postpartum cleansings* or *lochia.*

During the first 4 days following childbirth the lochia are of a sanguineous character, but then they gradually grow paler because of lower blood content and assume a serosanguineous character. From the 10th day after childbirth the blood completely disappears and the lochia become pale; by the end of the puerperium, i.e., in the 5th or 6th week after childbirth, the lochia completely cease. Such is the nature of the lochia during normal puerperium.

The odour of the lochia must also be taken into consideration. If some purulent infection is added, the odour sometimes becomes fetid ("lochia with an odour"). The odour of the lochia may also be caused by decomposition of the membranous remains retained in the uterine cavity.

During the first few days after childbirth *painful uterine contractions* are not infrequently observed. The postpartum pangs may differ in intensity, sometimes becoming uncommonly painful, most frequently in cases of multiparas. The uterine contractions are particularly vigorous and not infrequently very painful during nursing. In nurs-

ing mothers involution runs a milder course than it does in non-nursing mothers. In cases of very painful and frequently recurring postpartum pangs *antipyrine* (1 or 2 powders of 0.5 g per day) may be administered as an analgesic; in some cases suppositories with opium or belladonna prove effective.

During the normal puerperium the uterus is of a dense consistency.

Urination and Stool

After childbirth women usually urinate voluntarily. Sometimes voluntary *urination* is rendered difficult after childbirth because the urethra was long compressed by the passing fetal head. Difficult urination may also be due to crushing of the tissues surrounding the urethra and sharp pains in the deep fissures in the mucosa of the vaginal entrance, which are irritated by the outflowing urine.

In cases of long urinary retention a subcutaneous injection of 1 ml of pituitrin is recommended; urotropine in a dose of 0.5 g t.i.d. is administered per os. If urinary difficulties continue a bearberry decoction is recommended (*Decocti fol. Uvae ursi* ex 6.0 per 200.0 one tablespoonful every hour).

There is no need hurrying with catheterisation of the urinary bladder, because of the possibility of introducing infection into it. Catheterisation must be resorted to only in cases of prolonged urinary retention, distention of the urinary bladder and pains. It is best to use a metal catheter (Fig. 115), after first disinfecting the external genitalia. Catheterisation may be performed by the nurse only on a physician's prescription.

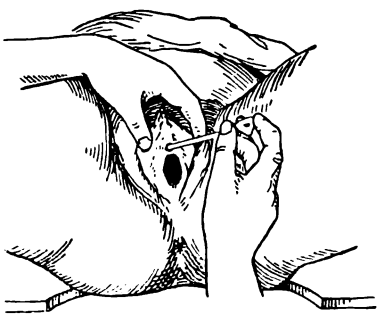


Fig. 115. Introduction of a catheter into the urethra

During puerperium the spontaneous *functioning of the intestines* is also rendered difficult; in a recumbent position the puerpera rarely has a spontaneous stool, especially, if she does not do any postpartum exercises. In such cases the intestines are usually cleansed with a laxative (*Magnesiae sulfuricae*, *Natrii sulfurici*, [Magnesium sulfate, Sodium sulfate], 15 g per dose), or a cleansing enema is administered on the third day after childbirth.

Temperature and Pulse

The *temperature* is measured twice a day in the armpit; normally it must not exceed 37°C. A normal *pulse* is full and 72-80 beats per minute. The nurse records the temperature and the pulse in the case history. The temperature and, especially, the pulse of the puerpera are the two basic indices of the puerperium. A rapid pulse, up to 100 beats per minute, even at normal or subfebrile temperature (37.3-37.5°C) warrants the assumption of puerperal infection. Of course, with pyrexia puerperal infection cannot be doubted.

Care of the Puerpera

In caring for the puerpera it is necessary in the first place to safeguard her against infection which may be introduced into the genitalia or breasts by the hands of the attending personnel, the puerpera's own hands, instruments, linens, the bedpan and everything that the puerpera comes in contact with, as well as against droplet infection (during sneezing, coughing, talking).

Everything depends on the organisation of the work in the postpartum department, the care of each puerpera, the qualifications of the attending personnel (nurse and orderly), and their observance of the rules of personal hygiene. The attending personnel must take the work in the postpartum department very seriously and remember the possibility of spreading infection. Even a mere washing of the puerpera's external genitalia, if it is done without the strictest observ-

ance of the rules of asepsis and antisepsis, may cost a human life.

Every detail in the care of the puerpera must be ascertained primarily from the point of view of asepsis and antisepsis.

If parturition took place in a special bed, about two hours after childbirth the nurse must thoroughly wash her

Fig. 116.

Washing the puerpera's external genitalia. In the left hand the nurse holds with a forceps reserve sterile tampons. The attendant pours boiled water from a pitcher so that the latter does not come in contact with either the puerpera's thigh or abdomen

hands and then, holding sterile cotton or, preferably, sterile gauze with dressing forceps, wash the puerpera's external genitalia with warm boiled water (Fig. 116) and wipe them with sterile cotton. The puerpera is then given a clean nightgown and clean blouse and is carefully transported on a wheel-table (or carried in the arms) to the postpartum department where she is placed on a bed prepared beforehand. If the puerpera remains in the same bed in which she gave birth (parturition at home), both the body linens and bed linens must be changed.

During the first hours following parturition it is necessary to watch the uterine contractions, the amount of blood being discharged and the puerpera's general condition. If the uterus tends to relax, the puerpera is given an ergot powder (0.5 g) per os or is administered 1 ml of a 10 per cent ergotine solution subcutaneously, and a bag with ice is applied to the lower part of the abdomen.

Good uterine contraction during the first two days after childbirth is an indispensable condition for normal puerperium; this must be remembered and must be striven for. In a well contracted uterus the lumens of the vessels become constricted, as a result of which hemorrhages cease and the access of infection from the uterine cavity into the blood vessels is barred.

It should be remembered that in a maternity home failure of the nurse and attendant to observe the rules of personal hygiene and the strictest rules of asepsis and antisepsis in the care of puerperas threatens to spread infection. A puerpera is likely to become infected if her external genitalia are washed without observance of the rules of asepsis; similarly, if the nurse washes the external genitalia of one puerpera and without thoroughly washing her hands begins to wash the external genitalia of another puerpera, she may introduce infection into the latter puerpera's genitalia. Two women with a perfectly normal puerperium may be dangerous to each other if the discharges of one woman gain entrance into the genitalia of the other one. The lochia always contain microbes and penetration of these microbes into another organism always increases their virulence. That is why all the things used by the women in the maternity home, especially the bedpans, must be very clean and each puerpera must have an individual bedpan. Each bedpan must be washed separately and thoroughly; after discharge of the puerpera the bedpan must be sterilised by boiling.

The nurse must be still more cautious during the care of the puerpera kept in the second (dubious) department. As was already mentioned, the second department admits women who constitute a danger of infection. This does not mean, however, that in the second department the puerperas are not dangerous to each other. On the contrary, the danger

of transmitting the infection is greater here than in the normal department. In the dubious department one woman may have a sore throat, another—influenza; one may have syphilis, another—furunculosis, still another—purulent discharges, etc. It stands to reason that if the attending personnel does not have the necessary experience in caring for and segregating the patients, all these puerperas are very dangerous to each other.

In maternity homes attempts are made to place puerperas in wards simultaneously (within 1-2 days after childbirth). Such admission of the puerperas is very advantageous for it facilitates making their toilet and makes it possible to discharge them and free the wards almost simultaneously. Thus, each ward is well ventilated and cleaned every 9-10 days, and a new group of puerperas is admitted to a freshly-cleaned ward.

The toilet of the puerperas' external genitalia is made twice a day—between 6 and 7 o'clock in the morning and between 4 and 5 o'clock in the afternoon.

The early toilet is in most cases determined by the conditions of work in the maternity homes. Wherever possible, the morning toilet should be started later in order to give the puerperas more time for rest.

The fate of the puerperas not infrequently depends on the efficiency and thoroughness of the toilet. A proper toilet requires clean hands, scrubbed as for a surgical operation (and preferably, gloved), sterile material and the *toilet made with the aid of sterilised (boiled) dressing or other forceps rather than with the hands,* boiled water containing a disinfectant, and clean linen.

The puerpera's temperature and pulse are always measured before their toilet is made so that sick puerperas may be discovered and their toilet made after that of the healthy women. Each puerpera has an *individual bedpan* during her stay in the maternity home and it is over this bedpan that her external genitalia are washed.

Before starting the toilet, the nurse sterilises the necessary instruments—dressing and other forceps—simultaneously for several puerperas. The instruments, the drum with material (sterile cotton tampons) and drugs (iodine, alcohol and hydrogen peroxide) are placed on a wheel-table

covered with a sterile napkin, and the wheel-table is moved from one puerpera to another (see Fig. 93). Before the toilet the puerperas must urinate and, if possible, defecate. Enemas are always administered before the toilet and the latter is made only after the bowel movement.

The external genitalia are washed as follows (see Fig. 116): the nurse takes a sterilised dressing forceps in each hand;

Fig. 117. Attendant helps the puerpera to wash her hands

with one forceps she removes several cotton tampons from the drum and with the other forceps held in the right hand she takes the tampons, one at a time, from the first forceps and washes the puerpera's external genitalia with them. In doing this the nurse must perform only anteroposterior movements (and never in the opposite direction) without touching either the genitalia or the thighs of the puerpera. The water is poured by an attendant from a special pitcher or from Esmarch's can through a boiled glass nozzle. The water must be boiled and warm. To check the temperature of the water, the nurse must first pour some of it from the pitcher on her own hand. It is necessary to give up the vicious habit of testing the water in the pitcher with the finger or palm; the attendants must be properly instructed and their attention directed precisely at that.

As soon as the genitalia are washed, they are dried with dry sterile cotton held with boiled dressing or other forceps. During the first toilet the labia are slightly parted with two cotton tampons and the mucosa of the vaginal entrance, but not farther, is examined. If fissures are discovered, they are irrigated with hydrogen peroxide (by the physician's prescription) once a day during the morning toilet.

While making the puerpera's toilet the nurse observes the region of the anus where *hemorrhoids* not infrequently appear after childbirth. If the hemorrhoids are painful, an ice bag wrapped in a sterile diaper may be applied to them and a suppository with belladonna introduced into the rectum once a day. Sometimes it is necessary to push the hemorrhoids back in, but this is done by the physician.

After the toilet the bedpan is removed and the linens are changed. It is necessary to watch that neither the linens and oilcloth placed under the puerpera by the attendant (or some other woman) nor the bed should come in contact with the latter and that they should be placed directly under the puerpera; the nurse standing on the other side of the bed should grasp the linens and oilcloth and pull them under the puerpera.

The puerpera's bed is put in order after the toilet. Following this the puerpera washes herself over a clean basin (Fig. 117), combs her hair and puts on a kerchief. The same things are done during the evening toilet. The puerpera's dirty linens are thrown into a special metal box and under no circumstances on the floor.

No vaginal douching should be attempted during the puerperium.

After completing the toilet of one puerpera the nurse and attendant wash their hands and begin the toilet of another healthy puerpera. After the toilet of all the puerperas in the ward the attendant airs and cleans the ward.

As was already mentioned, each puerpera must have an *individual bedpan* which has to be kept clean; each time after the bedpan was used it has to be washed with running water and formalin or a 2 per cent chloramine solution. *The bedpan must not be placed on the floor*; it must be kept either on a special stool near the bed or on a stand fastened to the bed.

During the toilet the contents of the bedpans are poured into a bucket right in the ward, which considerably quickens the work. At other times the attendants must take out the bedpans individually to the drain; if the attendant takes out two bedpans at the same time, and the bedpans are not numbered, she may mix them up and they will get to the wrong persons.

Care of Puerperas with Perineal Sutures

In cases of perineal sutures the external genitalia must be washed carefully; the region of the sutures must not be rubbed with cotton; after each urination it is desirable to pour boiled water over the external genitalia and to wipe them with sterile cotton. Upon appearance of films on the sutures the latter must be washed with hydrogen peroxide and carefully cauterised with iodine once a day. The sutures are usually removed on the fifth day. In cases of edema of the external genitalia an ice bag is applied to the genitalia covered with sterile gauze. However, the usual careful washing of the external genitalia is also enough, and the edema gradually disappears by itself.

Care of the Breasts

During the first 2 or 3 days after childbirth the mammae secrete colostrum, milk appearing only on the third or fourth day. The appearance of milk is attended with a pricking sensation, pain, tension, a feeling of heat and heaviness in the breasts; sometimes the puerpera feels chilly.

From the third or fourth day after childbirth, when the puerpera's breasts become indurated and very painful, the puerpera must wear an underbodice which raises and slightly compresses the breasts. Sometimes the physician recommends a laxative and limited consumption of liquid during these days. The sucking baby does not always sufficiently drain the breast on the third or fourth day after birth, and in some cases it is therefore necessary to draw off the milk by hand or with a breast pump (see Figs. 119 and 120).

The secretory function of the mamma depends on whether or not the puerpera nurses her baby. During nursing the secretion of milk continues for an average of 9-10 months. But if the puerpera for some reason does not nurse the baby (baby's death, active tuberculosis of the puerpera, etc.), the milk is secreted during the first days and the breasts become very much indurated, following which the secretion of milk diminishes and ceases altogether. The breasts contract. Colostrum is secreted for some time and then also disappears. If the puerpera does not nurse her baby, it is advisable, for the purpose of avoiding considerable induration of the breasts, to apply, on the second day after childbirth, a circular pressure dressing with the aid of a roller bandage or a towel, or to put on a tight-fitting underbodice.

The breasts must be raised, for which purpose the puerpera must wear a well-made tight-fitting underbodice. A towel may also be used for this purpose; the towel is put under the breasts and tightly fastened in front so that the knot may not discomfort the puerpera in bed.

During the puerperium considerable attention must be devoted to the *nipples*. It was already mentioned above that the cleanliness of the nipples is closely connected with the cleanliness of the whole body and that, to avoid formation of fissures, the nipples must be prepared for nursing during pregnancy. Fissures very often appear because the baby does not properly grasp them with its lips. It is therefore necessary that the baby should grasp with its lips the whole nipple from the very first day of nursing. Care of the nipples during the puerperium usually consists of the following measures: before nursing it is necessary thoroughly to wash the hands and swab the nipples with a sterile napkin soaked in a 2 per cent boric acid solution or a 0.5 per cent potassium permanganate solution. For this purpose it is best to have a sterile rod 10 cm long with a sterile cotton tampon set on one of its ends, so that by using this rod the puerpera does not touch either the nipple or the breast during the swabbing. During the intervals between the nursings the nipples should be coated with borated petrolatum or sterile cod-liver oil to soften the skin.

On the appearance of fissures the nipple may be powdered with white streptocide, or sulfanilamide emulsions may be applied to it. Ultraviolet irradiation of the nipples is also used.

If the fissures on the nipples do not heal and interfere with nursing, a glass nipple shield with a rubber nipple is used (Fig. 118); *each time before the nipple shield is*

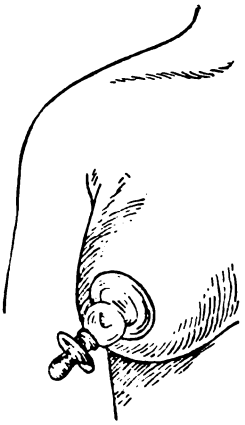


Fig. 118. Glass nipple shield

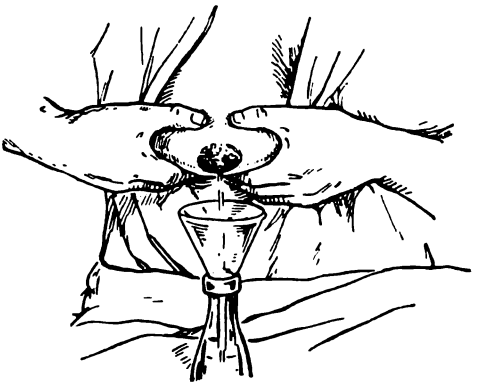


Fig. 119. Puerpera drawing off her milk

used it must be boiled. The nipple shield is also convenient because it prevents introduction of infection from the child's mouth into the breast.

Fissures in the nipples not only cause pain during nursing, but are actually also open infection gates and may lead to *mastitis* (p. 201). To function normally each breast should be completely drained during nursing; if the child cannot suck out all the milk, the remainder must be drawn off. The remaining milk is drawn off after nursing by the mother herself, who must first thoroughly wash her hands. The finger-nails must be closely trimmed. The hands are washed and the milk is drawn off under observation of the ward nurse.

The milk is drawn off into clean cups specially designed for this purpose and handed to the mothers by the nurses of the children's department. These nurses collect the

cups, pour the milk into clean bottles and pasteurise it. It is best to draw the milk off right into clean bottles (Fig. 119). In cases of hard and tense breasts, mainly in primiparas, it is sometimes necessary at the outset to use a sterilised (boiled) breast pump for drawing off the milk (Fig. 120).

Fig. 120. Milk drawn off by means of a sterilised (boiled) breast pump

Pasteurisation of the milk. The bottles filled with milk (50-100 g each) are plugged with sterile cotton and placed on the fire in a pot containing water. The water is heated to the point of boiling; within 5-8 minutes after the water begins to boil the heating is discontinued and the bottles are carefully but quickly cooled. The pasteurised milk is kept on ice.

It should be noted that if the mother runs a fever or has tuberculosis, syphilis or other infectious diseases, as well as acute gastrointestinal disorders, her milk must under no circumstances be collected and given to other children. Such milk may be given by a mother only to her own child by permission of a physician.

Puerpera's Diet

It is desirable that during the first day after childbirth the puerpera should be given only liquid food, following which she may be put on the usual diet, avoiding only foodstuffs which are hard to digest (sausage, cheese, etc.). Puerperas are strictly prohibited from consuming alcohol in any form whatever.

The ward nurse must very strictly examine the foodstuffs brought to the puerperas by their relatives. They are not allowed to pass prohibited food or pass the permit-

ted food in greater amounts than allowed. The food brought to puerperas must be wrapped in clean napkins or clean paper. It should always be remembered that infection may be brought in with the food.

Maternity homes have cosy dining-rooms for ambulant puerperas; these dining-rooms simultaneously serve as rest-rooms.

In the postpartum wards, as everywhere else in the maternity home, a strict therapeutic-protective regimen must be maintained.

A separate ward where the ambulant puerperas may nurse their newborn babies is desirable. This ward must have a washstand. Chairs and footstools at each chair for the puerperas' feet are placed along the walls. It is very essential to have such a ward because it makes it unnecessary for the newborn child to lie in the puerpera's bed where the child frequently becomes infected; it also enables the mothers to wash their hands more thoroughly before nursing and to nurse their babies in a comfortable sitting position; it gives the nurse a chance simultaneously to watch the nursing and to talk to the nursing mothers; the attendants can clean the ward vacated by the puerperas during nursing more thoroughly.

If the childbirth involved no surgical intervention, the perineum was not sutured, and the puerperium is normal (normal temperature and pulse, good uterine contraction, normal lochia and good general condition of the puerpera), the mother may be allowed to get out of bed on the fourth day after parturition. Sitting up in bed is allowed on the third or fourth day. On the fifth day the puerpera may already walk. This rising from bed has every advantage: it leads to uterine involution and outflow of the lochia, prevents retroversion of the uterus and favours better metabolism of the puerpera.

Still better effects are produced if, in addition to relatively early rising from bed, the puerpera does postpartum exercises. Rational exercise is a factor which improves the puerpera's general condition and accelerates all the processes of involution during the puerperium. During the puerperium physical exercise must constitute an obligatory part of the puerpera's daily regimen.

Postpartum Physical Exercise

Physical exercise is given to all healthy puerperas from the first or second day after childbirth. Only the puerperas with pyrexia or general diseases to whom physical exercise is contraindicated are excused. Puerperas with perineal sutures must do only breathing exercises.

The puerperas take their physical exercise every morning, one hour after breakfast, with the windows open in summer and after thorough airing of the ward in winter. The nurse may conduct the exercises with each woman individually, but this requires too much time and is not at all obligatory. It is best to conduct the exercises of the whole ward collectively, in which case the exercising is more animated and interesting (see Fig. 129). Physical exercise is aimed at teaching the puerperas to breathe correctly and deeply, at strengthening the muscles of the abdominal wall and pelvic floor, at activating the entire muscular system and causing more vigorous blood circulation. The exercises are conducted by the nurse under a physician's observation.

The exercises are done slowly, in tact with deep breathing, 4-8 repetitions each, depending on the woman's general condition and her reactions to the exercises. They take from 5 to 15 minutes.

It is very important that each puerpera discharged from the maternity home should continue exercising regularly at home. Physical exercise forms part of the regimen of the homes for mothers where the puerperas usually spend their entire puerperium; this makes it possible properly to evaluate the role of physical exercise and to work out a still more rational set of exercises.

The following is a model set of exercises for puerperas:

First Exercise Day

Exercise 1. Initial position—supine, arms extended along the body. Move arms sideways and upward (inhale). With arms in this position join palms. Bend arms in elbows and lower them along the body (exhale).

Exercise 2. Same initial position. Draw up the legs, bending them in the knees until the heels come as close to the buttocks as possible (inhale); extend the legs (exhale) (Fig. 121).

Exercise 3. "Half-bridge". Initial position—supine, legs bent in the knees, heels close to the buttocks and arms extended along the body. Raise the pelvis while resting on the feet and shoulder girdle

Fig. 121. First exercise day. Exercise 2

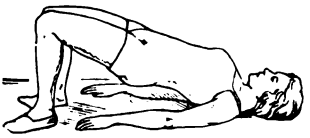


Fig. 122. First exercise day. Exercise 3

(inhale); lower the pelvis to initial position exhale. During inhalation draw in the anus, during exhalation relax (Fig. 122).

Exercise 4. Repeat Exercise 1.

Second Exercise Day

Exercise 1. The same as on the first exercise day.

Exercise 2. Initial position—supine, arms extended along the body. Bending the legs in the knees draw the knees towards the chest (exhale); extend the legs to initial position (inhale) (Fig. 123).

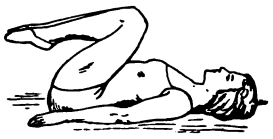


Fig. 123. Second exercise day. Exercise 2

Exercise 3. "Half-bridge".

Exercise 4. Initial position—supine, arms extended along the body. Turn to the right side, bend the left leg in the knee and try to press the knee against the chest (exhale); extend the leg without placing it on the bed (inhale). Turn to the other side and repeat the movement with the other leg.

Exercise 5. Repeat Exercise 1.

Third Exercise Day

Exercise 1. The same as on the first exercise day.

Exercise 2. Initial position—supine, arms extended along the body. Bend the legs in the knees, draw the knees up to the chest (exhale),

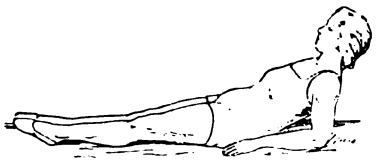


Fig. 124. Third exercise day. Exercise 4

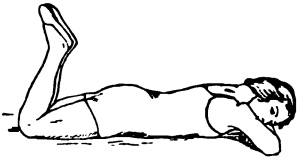


Fig. 125. Third exercise day. Exercise 5

extend the legs upward at a 45° angle and lower the extended legs to the initial position (inhale).

Exercise 3. "Half-bridge".

Exercise 4. Initial position—supine, arms extended along the body. Pushing up with the elbows (Fig. 124) sit up (exhale); the movement begins with raising the head and subsequent flexing of the back; resting on the elbows return to the initial position (inhale).

Exercise 5. Initial position—prone, the arms folded under the head. Slowly bend the legs in the knees (inhale); extend the legs (exhale) (Fig. 125).

Exercise 6. Repeat Exercise 1.

Fig. 126. Fourth exercise day. Exercise 4

Fig. 127. Fifth exercise day. Exercise 4

Fourth Exercise Day

Exercise 1. The same as on the first exercise day.

Exercise 2. Initial position—supine, the arms folded under the head. Bend the legs in the knees, draw the knees up to the chest (exhale), extend the legs upward perpendicular to the bed and lower them to the initial position (inhale).

Exercise 3. "Half-bridge".

Exercise 4. Initial position—supine, hands on hips. Without resting on the elbows sit up, reach forward and touch the toes with the hands (exhale); slowly return to the initial position (inhale) (Fig. 126).

Exercises 5 and 6. Initial position—supine. Turn to the right side, bend the left leg and press the knee to the chest. While in this position extend the leg 4-6 times. Turn to a prone position, bend legs in the knees and slowly extend them 4-6 times. Turn to the left side, bend the right leg and press the knee to the chest; while in this position extend the leg 4-6 times and turn to a supine position.

Exercise 7. Repeat Exercise 1.

Fifth Exercise Day

Exercise 1. The same as on the first exercise day.

Exercise 2. Initial position—supine, the arms extended along the body. Raise the extended legs to a position perpendicular to the bed (exhale); slowly lower the legs to the initial position (inhale).

Exercise 3. "Half-bridge".

Exercise 4. Initial position—supine. Initial position of the arms—individual, depending on the woman's physical condition; the arms

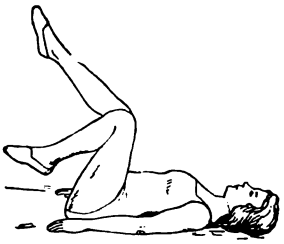


Fig. 128. Fifth exercise day. Exercise 5

may be flexed at the shoulders or folded under the head (Fig. 127). Sit up slowly, reach forward and touch the toes with the hands (exhale); slowly return to the initial position (inhale).

Exercise 5. "Bicycle". Initial position—supine, arms extended along the body, both legs bent in the knees are raised. The legs perform circular movements similar to those used by a cyclist in turning the pedals. The number of movements performed with the legs is individual (Fig. 128).

Exercises 6 and 7. The same as on the fourth exercise day.

Sixth and Seventh Exercise Days

The exercises are the same as on the fifth exercise day only with a greater number of repetitions. Since it is sometimes difficult to breathe properly and deeply and respiration is observed to be withheld in a number of exercises involving the abdominal wall, the women are given a rest between these exercises and are explained their mistakes; after withholding the breath the women should take several deep breaths so that the exercises do not affect the pulse.

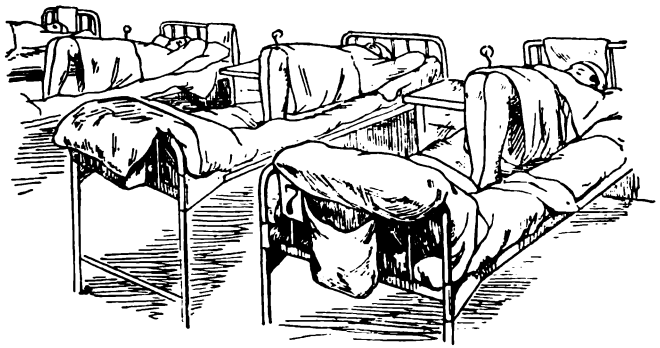


Fig. 129. General view of ward during exercise period. The puerperas are doing the "half-bridge" exercise

The foregoing exercises are used as a basis for a set of exercises which is issued to the women in printed or written form on the day of their discharge. Before discharge the women are explained the role of physical exercise for women in general and puerperas in particular.

Isolation of Puerperas

The nurse must be particularly careful to isolate in due time the puerperas with pyrexia by placing them in a separate ward or in the observation department. It should be remembered that in a common ward a puerpera running a fever jeopardises the healthy pyerperas and newborn children. Puerperas with pyrexia must be removed from the ward together with all their bed linens. A puerpera may have to be isolated not only because of purexia. In a number of cases (for example, ulcerative inflammation of the vagina, fetid lochia, etc.) the temperature may not rise, yet these women imperil the healthy puerperas and the newborn infants.

If, according to the conditions of work, the same nurse attends the healthy, as well as the isolated, puerperas, she must perform the toilet of the latter last and do it with gloved hands; after their toilet the nurse must change her gown.

Changing the Linens

As long as the puerpera is confined to bed all her linens must be changed as soon as soiled. The diapers must be changed without fail each time the puerpera's toilet is made, i.e., at least twice a day; during the first days following parturition, when the puerpera has a considerable discharge, the diapers must be changed 3-4 times a day (without washing the external genitalia). The body linens and the rest of the bed linens must be changed at least once every three or four days, and the blanket slip, if it is not soiled, every 8-9 days.

After the discharge of the puerpera her bed with all its accessories is subjected to thorough sanitary treatment. All the linens are washed, the mattress is taken outdoors where it is aired for 24 hours and, if it is encased in two slips, the upper slip is changed. The bed and bedside table are carefully scrubbed with hot water and soap and then rubbed down with mercury bichloride or a 2 per cent chloramine solution.

The oilcloth which was spread under the puerpera is also scrubbed with hot water and soap, treated with a

disinfectant (lysoform in a 2:100 concentration or a 2 per cent chloramine solution) and dried. The bedpan is washed and then boiled.

All this is done in cases of normal puerperium. If, however, the puerpera had pyrexia, the mattress, pillows and blanket have to be disinfected.

Fig. 130. Nurse preparing material for sterilisation. The linens are placed in the large drum, the cotton balls and tampons for washing the nipples, and small napkins—in the small drum

While the woman is in the maternity home the physician and nurse give her several talks on health education to acquaint her with elementary mother and child hygiene. To begin with, the woman is acquainted with the regimen in the maternity home and is explained its expedience. Nursing the baby and taking care of the baby and herself after discharge from the maternity home constitute the topics of the subsequent talks (see p. 190).

The ward is disinfected and prepared for admission of new puerperas between 10:00 p.m. and 12:00 midnight. The attendants clean the auxiliary rooms, wash and boil the bedpans at night.

In addition to making her rounds during the night the nurse examines the records of the prescriptions in the case histories, prepares the materials for sterilisation in drums (Fig. 130) and supervises the work of the attendants.

Model Daily Routine in Normal Postpartum Department

6 : 00 a.m.	Awakening of the puerperas
6 : 00—6 : 30 a.m.	Washing up. Measuring the temperature
6 : 30—7 : 00 „	Airing the wards. First nursing of the newborn
7 : 00—8 : 00 „	First toilet of puerperas. Cleaning and airing of the wards. Administration of prescriptions
8 : 00—8 : 30 „	Change of attendants' shifts
8 : 30—9 : 00 „	Breakfast; change of midwives' shifts
9 : 00—9 : 30 „	Preparations for nursing the newborn
10 : 00—10 : 30 „	Second nursing of the newborn
10 : 30 a.m.—1 : 00 p.m.	Rounds of physicians. Physical exercise. Carrying out of therapeutic measures. Health education work
00 : 30—1 : 00 p.m.	Preparations for nursing the newborn. Administration of prescriptions
1 : 00—1 : 30 „	Third nursing of the newborn
1 : 30—2 : 30 „	Dinner
2 : 30—4 : 00 „	Sleep. Airing the wards
4 : 00—4 : 30 „	Preparations for nursing the newborn
5 : 00—5 : 30 „	Fourth nursing of the newborn
5 : 30—6 : 30 „	Measuring the temperature. Second toilet of the puerperas. Airing the wards. Administration of prescriptions
6 : 30—7 : 00 „	Supper
7 : 00—8 : 00 „	Rounds of the physician on duty. Preparations for nursing the newborn
8 : 00—8 : 30 „	Fifth nursing of the newborn
8 : 30—9 : 00 „	Change of the personnel's shifts
9 : 00—9 : 30 „	Tea
9 : 30—11 : 00 „	Sleep
11 : 00—11 : 30 „	Preparations for nursing the newborn
11 : 30 p.m.—12 : 00 midnight	Sixth nursing of the newborn
12 : 00 midnight	Sleep

With this daily routine the puerpera has six hours for uninterrupted night sleep and three hours for sleep during the day, which gives her enough time for rest.

To prevent bringing in infection, *visiting the puerperas by their relatives is strictly prohibited.*

Discharge of the Puerpera and the Newborn

In cases of normal parturition and puerperium and normal condition of the newborn the mother and child are usually discharged on the ninth day.

The discharge formalities are carried out by the physician (in a collective farm maternity home—by a midwife) during his morning rounds. On the eve and on the day of the discharge the nurse instructs the puerpera concerning her behaviour at home. The nurse's instructions include the following:

1. To spend the first day at home in bed.
2. To keep her body very clean:
a) to wash herself to the waist, including the breasts, twice a day with water at room temperature and soap;
b) to take a daily warm shower, washing herself with soap and a sponge; bathing in public baths or in a bath-tub is not allowed for 6-8 weeks after childbirth;
c) carefully to wash her hands before each nursing and taking her own meals, after cleaning her house, visiting the toilet, etc.; to trim the nails short and refrain from painting them;
d) to wash her external genitalia morning and evening (with clean hands) from a cup, teakettle, etc., with warm water and soap and dry them with a special towel.
3. To use clean linens and clothing:
a) to wear dresses made of easily washable fabrics and to wash them more frequently;
b) to change the underwear every 3-4 days and the bedlinens every week;
c) to wear a nightgown for the night;
d) to wear an underbodice which offers good support but does not compress the breasts, and to change it every day;
e) to wear a binder for 2-3 months after parturition.
4. To spend more time outdoors and carefully to air the room and bedding. To clean the room with a moist rag. To allow no smoking in the child's room and to keep no dog or cat in it.
5. To keep to a proper diet, i.e., consume fresh meat, fish, vegetables and dairy products. The following foods are especially healthful: buckwheat and oats with milk, all forms of sour milk, curds, honey, jam, tea with milk, fruit and vegetable juices, berries, raw and stewed fruit and vegetables (raw fruits and vegetables must be washed with boiled water). Alcoholic beverages are prohibited.
6. To see that she has a daily bowel movement.
7. In cases of normal puerperium to resume her sexual life no sooner than 8 weeks after childbirth by permission of the physician of the maternity health centre.
8. To observe a proper work and rest regimen at home:
a) to take up her housework gradually;

b) to sleep no less than 8 hours a day and take a rest without fail during the day;

c) to lift no heavy weights and do no hard physical work;

d) to do the physical exercises recommended at the maternity home and then the exercises prescribed by the physician of the maternity health centre.

9. To visit the district physician of the maternity health centre within about one week after discharge from the maternity home. In case of any complications (pyrexia, hemorrhage, excessive induration of the breasts, appearance of pain in them, fissures in the nipples, etc.) immediately to apply to the physician of the maternity health centre.

All the necessary documents for the infant and maternity health centres are prepared beforehand.

If any deviations from normal (temperature above 37°C, quick pulse, indisposition) are observed in the condition of the mother or child on the day of their discharge, they are re-examined by a physician and, if the physician is absent, are detained in the maternity home until the next day.

For the discharge of puerperas every maternity home has a special room located near the exit. The room is furnished with a swaddling table, mirror, two chairs and an armchair so that the puerpera may take a rest after changing her clothes. On the walls there are pictures and tables pertaining to questions of the puerpera's hygiene and care of the child. The puerpera comes to this room in a hospital gown escorted by the nurse or attendant; the latter helps the puerpera to dress. The puerpera's clothing is prepared beforehand, being brought by her relatives through a special door.

The child's case history (sex, name of the mother and number of the case history) is very carefully checked against that of the maternal case history, after which the nurse of the children's department brings the child.

The nurse places on the swaddling table the baby's things brought from home. After removing the maternity home linens, the nurse shows the baby to the mother, removes a bracelet from one wrist and once more ascertains the inscriptions on it. Following this the nurse diapers the child under the mother's observation and hands it to the relatives who have called for the mother. In winter the child must be wrapped up more warmly to avoid cooling; it does well to place two or three hot water bottles around the blanket.

If no one has called for the puerpera or the latter is unmarried and the maternity home has been notified about it by the nurse of the social and legal aid department, the puerpera is sent home or to a mother and child institution under the escort of a nurse or an attendant.

PUERPERAL DISEASES AND CARE OF THE PATIENT

Owing to the considerable distention of the soft tissues of the birth canal during the passage of the fetus, fissures of the mucosa, tears of the os uteri and lacerations of the perineum not infrequently occur. After separation of the placenta from the uterine wall the latter retains a large wound surface. All these wounds may serve as infection gates.

That is why we dwelt in detail (p. 151) on the importance of proper management of labour. Strict observance of the rules of obstetric asepsis and antisepsis and creation of a therapeutic-protective regimen form the basis for normal puerperium. In most women it takes place without pyrexia, quick pulse, chills or pains.

If infection gains entrance into the fissures of the vaginal mucosa and into the uterus, the puerperium runs an irregular course during which pyrexia sometimes attended with chills and a quick pulse is most frequently observed. The uterus contracts poorly; on palpation it does not appear hard, as usual, but rather somewhat doughy and the puerpera feels pain. The lochia are more profuse and retain their sanguineous character longer than usual. These phenomena are sometimes more and sometimes less strongly pronounced. In some cases all the aforesaid phenomena are observed, but at times some of these phenomena are absent.

Infection may gain entrance into the uterus from the vagina or it may be introduced by poorly washed hands during vaginal examination, management of labour and the puerpera's toilet, or it may be brought in by instruments (in cases of surgical intervention, if the instruments were not adequately sterilised). Infection may also be introduced into the genitalia from the respiratory tract (nose and mouth) of the attending personnel, especially, if the

latter happen to have a nasal cold, sore throat, etc. Puerperal infection not infrequently develops because the puerpera may have a focus of infection (carious teeth, abscesses, sore throat, gonorrhea, etc.). It is therefore necessary to give every pregnant woman an all-round examination at the maternity health centre and, if any foci of infection are discovered, immediately to start treating them in order to eliminate them in good time.

Infection gaining entrance into the uterus during puerperium does not always provoke disease. If the woman is not weak and if she took physical exercise during pregnancy, properly utilised her antepartum leave and led a regular life (took walks, kept to a diet, etc.), she is in a position to overcome the infection and no disease develops.

It should be noted that during the puerperium a rise in temperature even to 37.2-37.3°C cannot be considered normal; in these cases there is usually a feebly marked inflammatory process on the internal surface of the uterus, while the general condition of the patient is not particularly affected and the pulse rate has hardly increased. Such women must be kept in bed somewhat longer and discharged only after the temperature and pulse have been perfectly normal for a period of 2-3 days.

The infection which has gained entrance into the genitalia may become localised in the vaginal mucosa or on the internal surface of the uterus without spreading any farther. In such cases inflammation of the vagina (*colpitis,puerperal ulcers*) or inflammation of the uterus (*metroendometritis*) is possible. In other cases the infection spreads throughout the puerpera's organism and causes severe forms of disease: general infection—*septicemia*, sometimes with formation of abscesses in the subcutaneous tissue or internal organs—*septicopyemia*. In cases of a widespread process during the puerperium inflammation of a venous wall is possible; thrombi are formed and sometimes may suppurate; this disease is known as *thrombophlebitis*. Thrombophlebitis may affect both the superficial and the deep veins.

If the infectious inflammatory process is confined to the vagina and uterus, the patients usually recover rather quickly. But, if the infection has spread beyond the uterus and the organism's resistance is low, the disease lasts quite

long and in some cases (septicemia and septicopyemia) ends lethally.

All cases of puerperal disease require hospital treatment.

In the treatment of puerperal diseases the basic and for the most part decisive factor is the creation of favourable conditions for the puerpera, which help her organism to cope with the infection.

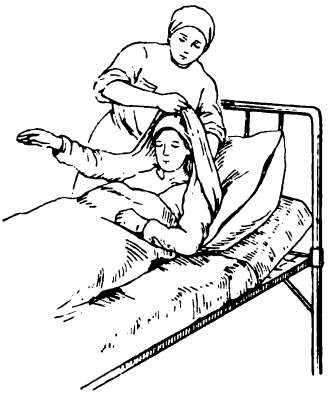


Fig. 131. Changing the puerpera's blouse. The nurse removes it over the puerpera's head

Fig. 132. Changing the puerpera's blouse. The nurse helps the puerpera put on a clean blouse

The *outcome* of severe puerperal diseases essentially depends on the care of the patient; patient and thorough care of the sick puerpera very often leads to recovery in even extraordinarily grave cases.

Of medicinal agents sulfa drugs and antibiotics are usually prescribed.

Attention must be devoted in the first place to the patients' proper toilet which is aimed at maintaining the perineum and adjacent parts in a hygienic conditions.

It should be noted once again that the patients' toilet must be made with instruments, gloved hands and sterile material.

Cleanliness of the wards, the patients' beds and the patients themselves is also very important. The air in the wards must always be fresh for which purpose the wards

must be repeatedly aired; in summer the windows must be open 24 hours a day, but they must be screened to keep out flies. The body linens (Figs. 131 and 132), as well as the bed linens (Figs. 133 and 134), must be changed at least every

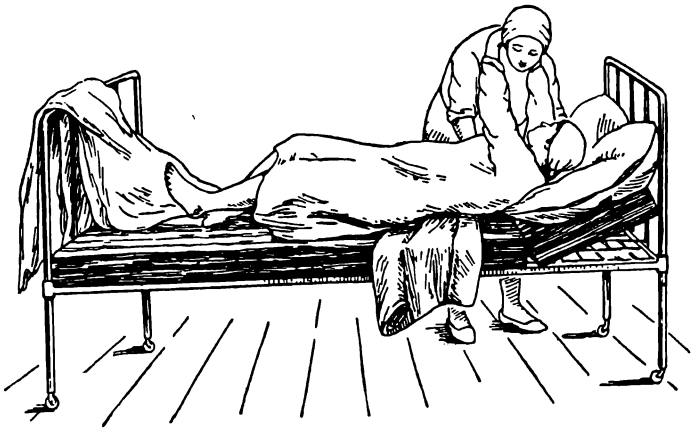


Fig. 133. Changing the bed linens. The nurse slightly lifts the puerpera who embraces the nurse's neck, while the sheet is pulled out from under the puerpera

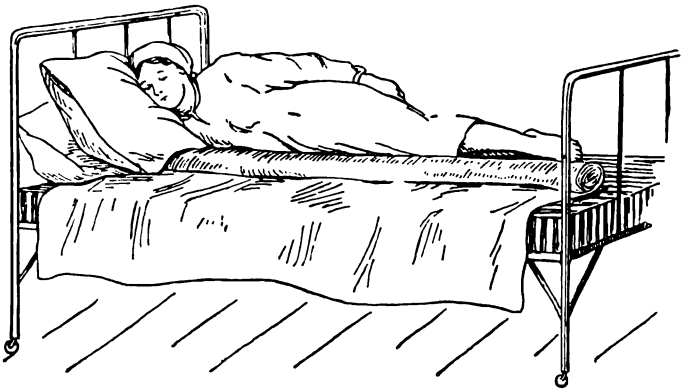


Fig. 134. Changing the bed linens. A rolled sheet is placed on the mattress to the side of the patient. The patient is carefully moved to the half of the clean sheet already spread, after which the remaining part of the sheet is unrolled and the entire mattress is covered

4-5 days. If the patient perspires profusely, the linens must be changed more frequently, especially the shirts and sheets. It is similarly necessary frequently to change (4-5 times per day) the diaper spread under the patient, especially if the latter has a profuse discharge, regardless of the nature of the discharge.

The bedpans must be kept clean and disinfected (boiled) every 5 days.

Serious attention must be devoted to the patient's diet which constitutes part of the treatment. The food must strictly correspond to the patient's condition and must contain enough vitamins. It must be fresh and palatably prepared. and must be served hot. The looks of the food are also important. A dirty plate, cold dish and too big a portion, all affect the patient's appetite which, as a rule, is very poor as it is. Usually patients are given 3-4 meals a day. Grave patients must be fed as often as possible (every three hours) but in small portions, in which case they are able to consume more food (Figs. 135 and 136).

Serious attention must also be devoted to drinking. The patients may be given as much liquid as their condition warrants. They may be given tea, weak coffee, mineral water, water with fruit juice and cold or hot boiled water, whichever the patient may choose.

Care of the oral cavity is very important. If the patient runs a high fever, her lips and tongue become dry and coated with a film and crusts. The mouth must be cleaned after each meal, as well as during the patient's morning toilet and in the evening before sleep. The mouth must be carefully swabbed with cotton wound on a stick and soaked in the following solution:

Rp. Boracis (Boric acid) —
Glycerini (Glycerin) aa 15.0
MDS

During the puerperium *ice* is very often applied to the *lower part of the abdomen*. The attending personnel must see to it that the ice bag is filled with ice and not water and that it is applied to the site indicated by the physician for the prescribed period of time with definite intervals.

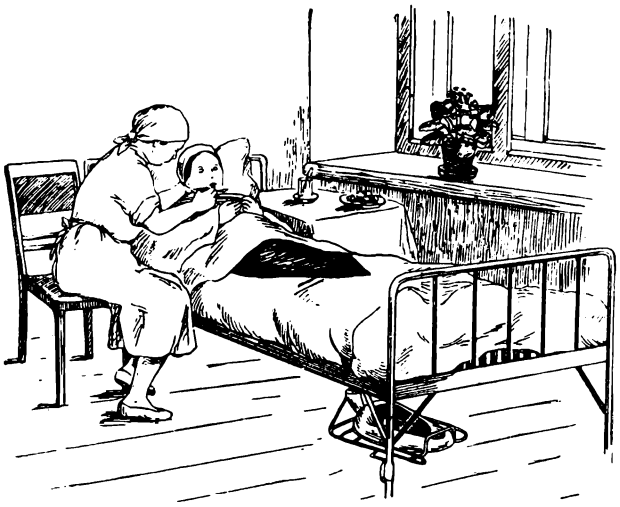


Fig. 135. Nurse feeding a sick puerpera

The temperature and pulse must be simultaneously measured twice a day (sometimes more frequently by prescription of the physician) at the fixed time, preferably at 6:00

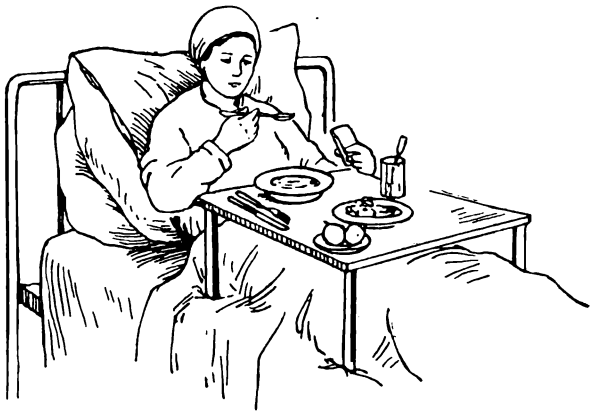


Fig. 136. Bed-table for bedridden convalescent puerperas who are unable to go to the dining-room

a.m. and 6:00 p.m. The figures obtained are recorded in the temperature chart producing two curves—temperature curve (black) and pulse curve (drawn in coloured pencil). All intravenous injections, operations, administration of potent medicines, etc., are recorded in the temperature chart under the corresponding date. A single glance at such a temperature chart offers an immediate idea of the patient's condition and the methods of her treatment. After each attack of chills the temperature is immediately measured and the data obtained are recorded in the case history and the temperature chart.

During the puerperium patients are confined to bed in a supine position for a long time; owing to constant pressure the skin over the bony prominences (scapulas, sacrum) becomes erythematous and subsequently may develop necrosis and form ulcers—*bedsores*. Bedsores develop particularly easily if bread crumbs accumulate in the bed and if the patient lies on creased sheets. To prevent bedsores, the patient's body and bed must be kept particularly clean (the creases in the night gown and sheet must be carefully smoothed out and the crumbs removed; the body must be rubbed down with camphor, alcohol, vodka mixed with an equal amount of water, aromatic vinegar, toilet water, etc.). If the bedsores are not caused by the character of the affection (for example, lesion in the brain or spinal cord), they are a result of inadequate care of the patient.

If bedsores have developed in spite of everything that was done to prevent them, they should be coated with Vishnevsky's ointment, camphor alcohol, or a strong (10 per cent) potassium permanganate solution. The affected part is covered with sterile gauze which is changed at least 5-6 times a day, or at any rate after each defecation and urination.

In cases of *thrombophlebitis* of a leg the affected leg must be kept somewhat raised. This can be achieved in two ways: either a special frame the width of the bed, or a mattress or pillow folded in two are placed at the foot of the bed. This will keep the patient's legs raised and immobile. A mattress or pillow are preferable because they are less tiring than a frame. Moreover, when a pillow or mattress are used, movements imperceptible to the eye are retained in the

joints; this prevents ankylosis (fixation or stiffness in the joints).

The bedpan should be placed under the thrombophlebitis patient and her bedding must be changed with extreme caution. The following method is considered the best. A wide towel or a sheet are placed under the patient's pelvis; standing on both sides of the patient attendants lift the ends of the towel or sheet and thus somewhat raise the patient's pelvis, at which time the bedpan is placed under the patient or her bedding is changed. Following this the patient is slowly and carefully lowered in place. The bedpan may be removed without lifting the patient. The patient must lie with her legs somewhat parted. If one of the patient's legs has to be raised, it is best to grasp carefully the toes with one hand and the heel with the other hand and thus lift the whole leg.

If such a patient has to be administered an enema, it is always advisable to use little water and raise the can no more than 1 m above the level of the bed. In these cases the water enters the rectum slowly and the latter is not greatly distended; as a result the pressure on the affected veins of the minor pelvis will not be too high.

As was already mentioned, in cases of thrombophlebitis of the femoral veins a dressing with Vishnevsky's ointment is applied. The leg is bandaged loosely from the toes towards the hip. Leeches are also widely used.

If there is pus in the minor pelvis, an incision of the posterior fornix is made (posterior colpotomy). To facilitate pus drainage after the operation, the head of the bed is raised, for which purpose a low stool or special supports are placed under both legs of the bed.

In cases of pneumonia or pulmonary abscesses the patient must be kept in a half-sitting or close to half-sitting position. This is achieved by placing a support under the pillow (the width of the bed) or by putting three or four pillows at the head of the bed. In this position it is much easier for the patient to breathe.

It should be emphasised that care of the patients with puerperal diseases forms part of the therapeutic measures. Strict execution of all of the physician's orders, careful observation of the patient and detection of every, even

seemingly insignificant, change in her condition, thorough and thoughtful care, creation of an atmosphere in which the patient may not feel forsaken, and peace of mind are all extremely important factors which help the patient to recover.

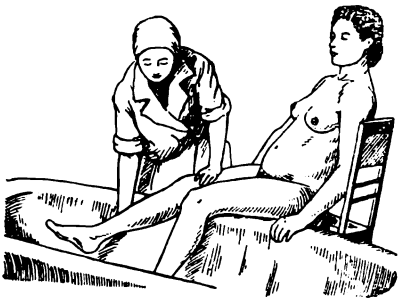


Fig. 137. First bath of a patient convalescing after a severe and prolonged puerperal disease. First part—the nurse lowers the patient's legs into the bath-tub

Fig. 138. Second part—grasping the patient under the armpits the nurse helps her to immerse in the bath

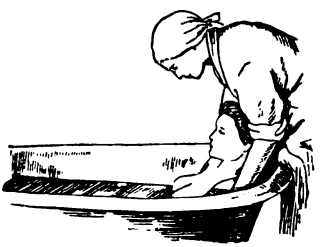


Fig. 139. Third part—the patient is in the bath-tub, the water reaching halfway up her chest. The nurse supports the patient from the rear

As soon as the morbid process has been eliminated and the patient is on the way to recovery, she may be prescribed various therapeutic baths. Figs. 137, 138, 139 show how the nurse must administer them.

Care During Mastitis

On the appearance of indurations and, especially, redness in a breast attended with pyrexia, it is immediately necessary to bandage the breast tightly, raising and pressing it against the chest (Figs. 140 and 141), and place an

Fig. 140. Bandaging the breast during mastitis

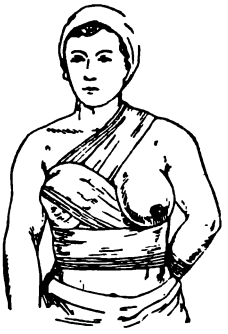


Fig. 141. Bandaged breast

ice bag over the bandage. Nursing is discontinued for at least 12 hours. At the end of this period the breast is unbandaged, the milk is drawn off and the bandage is reapplied for another 12 hours. If the symptoms of inflammation (pains, temperature) subside after this, the application of cold is discontinued and the baby is given this breast through a nipple shield.

If the inflammatory process in the breast progresses, i.e., the pain, swelling and redness increase, the temperature remains high, and swelling and pain appear in the axillary glands, *mastitis* (inflammation of the mamma) results. In such cases an oleobalsam compress (after Vishnevsky) is prescribed. It is prepared as a usual compress, but contains an ointment instead of water.

The compress is made with a "window" over the nipple to nurse the baby. After nursing the window is closed with sterile gauze soaked in cod-liver oil.

In cases of a fluctuating (softened) focus the latter is incised by a physician.

CHAPTER X

CARE OF THE NEWBORN

CARE OF THE MATURE BABY

The first toilet of the newborn is made on the swaddling table in the labour room.

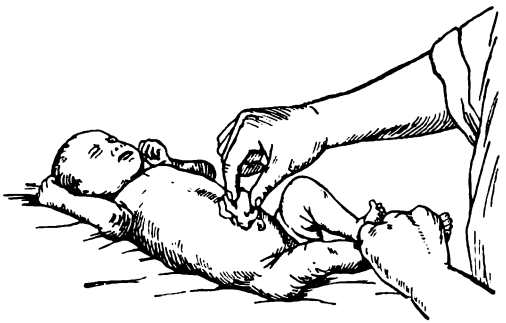


Fig. 142a.
The remaining umbilical stump is tied with a sterile lace, the stump is painted with iodine and covered on top and bottom with a sterile gauze towel

Toilet of the Umbilical Cord

The nurse thoroughly scrubs her hands, as for an operation, and disinfects them with 190 proof alcohol. Following this she places dry sterile gauze under the remaining part of the umbilical cord, and a string ligature or umbilical clamp on the umbilical cord 1.5-2 cm from the umbilical

ring. Grasping sterile cotton with a forceps the nurse soaks the cotton in 190 proof alcohol, swabs the part of the umbilical cord above the ligature and cuts the umbilical cord above the ligature with sterile scissors so as to leave a stump 4-5 cm long. After this she paints the surface of the cut with a 10 per cent iodine tincture, applies a dry sterile

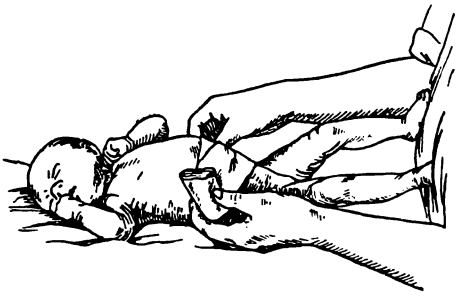


Fig. 142b. The umbilical stump is bandaged with a sterile bandage

dressing of 2-3 layers of gauze without cotton (Figs. 142a and 142b) and bandages it.

If Rogovin's clamps are used, the umbilical cord is cut almost along the edge of the clamps.

Sterile gauze, cotton, ligature, roller bandage and swab for iodine are prepared beforehand in individual packages for each child separately.

The toilet of the umbilical cord is one of the most important parts of the nurse's work. Here everything depends on asepsis and antisepsis. The slightest negligence in this respect threatens introduction of infection into the vessels of the umbilical stump, where umbilical sepsis may develop.

In addition to the bracelets which are placed on the child's wrists, a locket with the numbers of the case history and of the mother's bed is attached to the blanket.

During the first toilet and subsequently it is necessary to keep the child warm, for which purpose either a large hot-water bottle on which the child is diapered (it should be remembered that the child may sustain a burn and this must be prevented) or a heating lamp are used, or the child is diapered on a specially heated table.

Fig. 143a.
Measuring the length of the newborn with a special height-measuring device. The attendant holds the child's head at the stationary end of the device, while the nurse extends the child's lower limbs with one hand and moves the movable end of the device to the child's feet

Fig. 143b.
Measuring the circumference of the newborn child's head

Toilet of the Skin

With a sterile cotton soaked in sterile vaseline or vegetable oil the vernix caseosa is carefully removed from the places of its greatest accumulation on the child's skin—folds of the neck, axillas and inguinal region. The sterile oil is prepared in small bottles preferably with a tight-fitting plug.

Measuring and Weighing the Child

After the afore-described toilet the child is carefully examined and his height is measured (Fig. 143a). During the examination the existence and condition of a birth tumour, developmental defects and malformations (for example, harelip, cleft palate, absence of anus) are noted. Then the circumference of the head is measured (Fig. 143b) with a tape-measure carried around the root of the nose and the occipital protuberance (34 cm). After this the child is weighed (see Fig. 154) and diapered.

Diapering

During the first days, when the baby is diapered, its head and arms are also covered with a diaper; subsequently a baby's vest and blouse are put on the baby, the baby is diapered and wrapped in a blanket (Figs. 144-149) and the arms are left free. The child is placed on its side so that it does not choke during regurgitation; during the first day the child sometimes regurgitates a good deal of the amniotic fluid it had swallowed. No pillow is placed under the child's head. It is advisable to place a hot-water bottle (not too hot) at the child's feet, because the toilet somewhat cools the child.

After the first toilet the child is left in the labour room for 2-3 hours and is then transferred to the children's department.

In taking over the newborn the nurse of the childrens' department checks the numbers on the child's locket and on

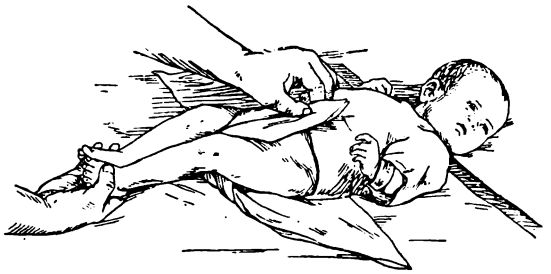


Fig. 144.
Diapering the newborn. First part—the baby in a vest, a diaper under its buttocks, two corners of the diaper brought between the child's legs. Under the diaper there is another diaper and under it—a blanket

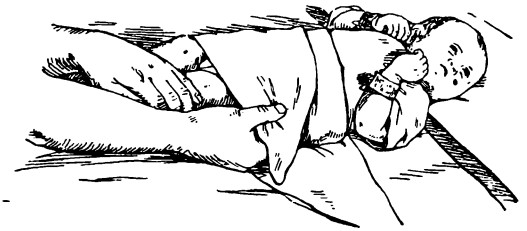


Fig. 145.
Diapering the newborn. Second part—the right outside corner of the diaper is wrapped tight around the child's belly, after which the same is done with the left corner

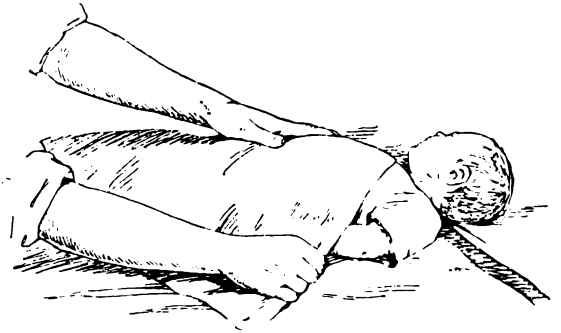


Fig. 146.
Diapering the newborn. Third part

Fig. 147.
Diapering the newborn. Fourth part

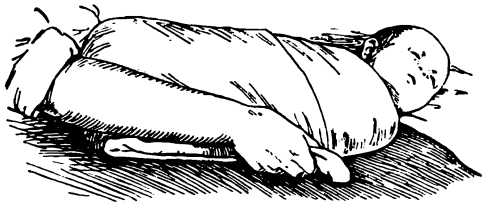


Fig. 148.
Diapering the newborn. Fifth part—**the** lower end of the diaper is placed on **top,** while its edges are carried under the **back**

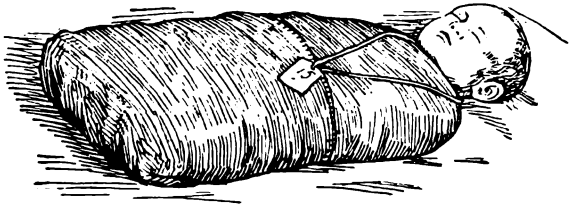


Fig. 149.
The newborn wrapped in a blanket

both bracelets, the mother's name and the child's sex against the mother's and child's case histories, and determines the child's condition (active, good crying or vice versa). After this the nurse makes the following entry in the mother's case history—"Received boy (girl), hour, day and month of admission to the children's department, in good condition"—and signs it. A similar check-up is made when the child is transferred to another department and when it is discharged from the maternity home.

Birth Tumour and Cephalohematocele

Moving along the birth canal the fetal head overcomes certain obstacles and somewhat changes in appearance. Since the cranial bones are not united and are therefore relatively mobile, during compression of the head one bone somewhat extends beyond another, owing to which the shape and size of the head (configuration of the head) are altered. Since the head stays in the bony ring of the pelvic inlet for a long time and is closely engirded by this ring,

Fig. 150.
Birth tumour located in the region of the parietal bones

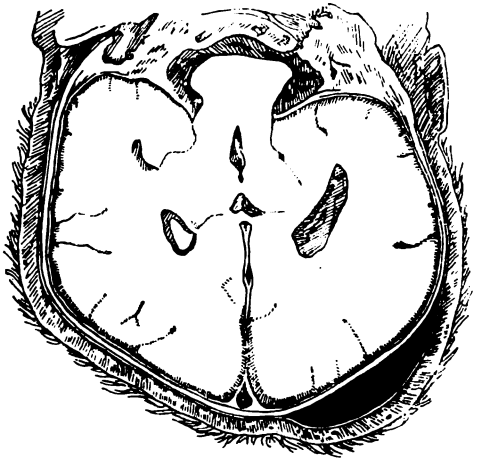


Fig. 151.
Cephalohematocele. The tumour is located on one bone and does not extend beyond its edges

subcutaneous edema of the head—birth tumour (Fig.150)—results.

In addition to the birth tumour, the head of the newborn may have a tumour of other etiology. In cases of contracted pelvis, for example, when the head moves through the bony ring of the pelvis with great difficulty and for a very long time, detachment of the pericranium with a hemorrhage between the cranial bone and the detached pericranium is possible. A similar hemorrhage may occur if the child is extracted with forceps. Such a hemorrhage is called a blood tumour or *cephalohematocele* (Fig. 151). Unlike a birth tumour, a cephalohematocele does not go beyond the cranial suture, whereas a birth tumour may extend to two or even three cranial bones.

It should be remembered that the tumour may not be touched, pressed, squeezed or massaged; it is reabsorbed spontaneously. A birth tumour usually disappears within several days after birth; a cephalohematocele passes more slowly and sometimes persists for about a month.

Child's Bed

In the maternity home each child has an individual bed with the same number as that of its mother's. The child must also have a separate bed at home. The mother must under no circumstances place the child in her own bed; this is unhygienic and dangerous because the sleeping mother may crush the child. If there is no separate bed for the child at home, it can be replaced by a usual clean linen basket lined with a clean canvas and placed on two stools tied to each other. A clean mattress in a mattress slip is placed in the basket and is covered with an oilcloth and a sheet; a small pillow is put at the head. The child must not be kept in a cradle, must not be rocked, and must be given as much fresh air as possible. The child must not be kept in swaddling clothes because they impede normal development.

Care of the Skin

The newborn child's skin is very delicate and extraordinarily sensitive to any, even slight irritation. The child's skin must therefore be kept very clean. The child must be

Fig. 152.
Washing the newborn's genitalia. The nurse washes the newborn with running water anteroposteriorly

diapered, and its diaper changed before each nursing. Before diapering the child the nurse must thoroughly wash her hands. If the diapers become soiled, it is necessary immediately to wash the child's private parts and to change the diapers. The child's private parts must be washed with running warm water (36°C), the nurse thoroughly washing her hands first. While washing the child, the nurse's hands must move anteroposteriorly so that no feces may be brought into the genitalia from the anus (Fig. 152). The washed part must be carefully wiped with a diaper.

It is advisable to coat the buttocks and inguinal folds with sterile vaseline or vegetable oil two or three times a day.

Care in cases of chafing. First of all it is necessary to eliminate the irritation produced by urine and feces, for which purpose the child must be diapered more frequently, but not tightly, and an extra diaper folded several times must be used instead of an oilcloth. The chafed part must be coated with sterile vaseline or vegetable oil, or washed with a 5 per cent potassium permanganate solution. On the appearance of pustules the child must be immediately isolated.

Chafing is a result of negligence. If the child is well cared for, chafing can always be avoided.

Baths. As a rule, newborn babies are not bathed in the maternity home, but sometimes, if necessary, the physician prescribes a bath. If the remaining umbilical cord has not

yet become detached, such a *therapeutic* bath must necessarily be made with boiled water at a temperature of 36-37°C, sometimes adding a very weak potassium permanganate solution, without removing the bandage (Figs. 153a-

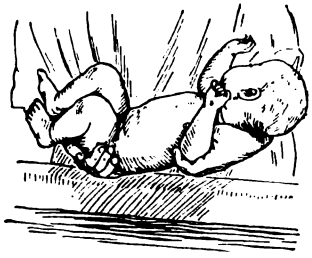


Fig. 153a.
Child being immersed in bath. The child's head rests on the nurse's forearm

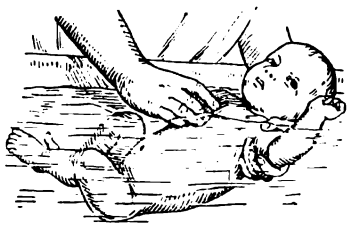


Fig. 153.b.
Washing the front part of the child. The nurse holds the child's shoulder in her left arm, the child's head resting on her forearm

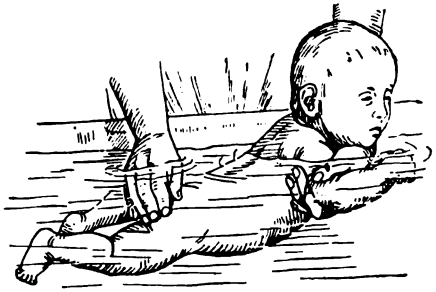


Fig. 153c. Washing the child's back parts. The nurse holds the child on her forearm, the child's head resting on her forearm

153c). After the bath the umbilical cord is unbandaged, wrapped in a strip of gauze soaked in alcohol and rebandaged.

If the umbilical cord has already detached itself, which usually occurs towards the seventh day after birth, the umbilical wound is painted with iodine after the bath.

The bath-tub is carefully washed with a sterile sponge, hot water and soap and is rubbed down with a lysol solution each time before and after it is used.

Weighing the Child and Measuring Its Temperature

The temperature and changes in weight are the main criteria by which the condition of the newborn baby is judged. For this reason the temperature is measured every morning and evening. The thermometer is placed in an axil-

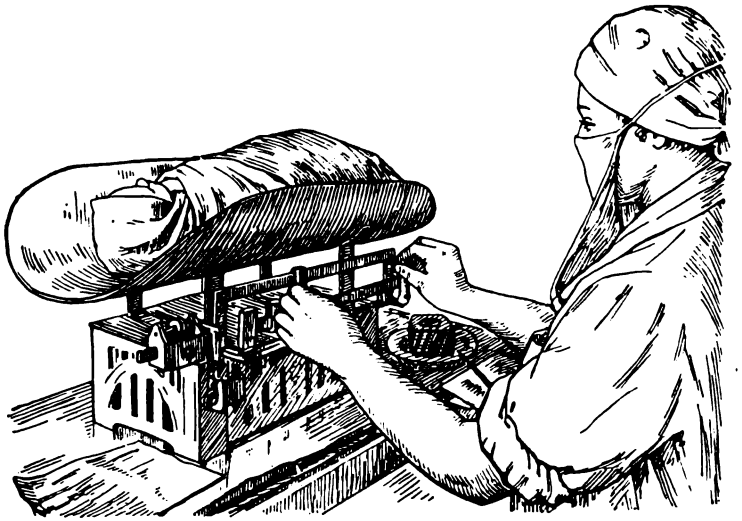


Fig. 154. Weighing the newborn before and after nursing

la for 10 minutes, the child lying on its side and its arm being held in place. After use the thermometer is thoroughly washed and then kept in alcohol. Before use the thermometer is wiped with sterile cotton.

The temperature of a healthy child must not exceed 37°C.

Newborn children are weighed every day during their morning toilet (Fig. 154). A loss of about 150-200 g of weight (5-6 per cent of the original weight) is usually observed during the first 3-4 days; this is the so-called *physiologic loss of weight*. After the aforementioned period the child begins to gain weight, but, if it continues to lose weight, it must be either sick or hungry, in which case it

must be placed under special observation. To check on the amount of milk sucked by the child during nursing,

Fig. 155. Sick children in cubicles

the child must be weighed before and after the nursing. In the maternity home the physician of the children's room examines each child every day.

Isolation of Sick Children

Timely isolation of the sick child not infrequently decides the fate of the other children in the children's room. On appearance of coryza, skin eruptions, pustules and fever the child must be immediately isolated because, under

the conditions of work in the children's room, every hour is very important.

Every large maternity home has a special ward with separate compartments for isolating sick children. In small maternity homes there are special cubicles for sick children in the children's room (Fig. 155).

Figs. 156 and 157.
Healthy newborn are transported for nursing in a special carriage, the children being placed like the knaves in playing cards. The sick children are carried in arms singly. For nursing the children are swaddled. During diapering the children's arms are released

It should be remembered that infection may be transmitted by the droplet method not only from child to child, but also by the attending personnel, for which reason each cubicle must have its own gown which the nurse puts on upon entering the cubicle. On leaving the cubicle the nurse takes off the gown and leaves it there; before entering another cubicle she thoroughly washes her hands.

If all the children are attended by one nurse, the toilet of all the healthy children is, as a rule, made first and the sick children are attended last.

The children kept in separate cubicles are brought to their mothers for nursing apart from the other children and, whereas the healthy children are wheeled in a special carriage (Fig. 157), the sick children are carried by the nurse

individually (Fig. 156). A sick mother (influenza, tuberculosis) also very much jeopardises the child. If the puerpera has influenza or a redness in her throat, or if she coughs, she must wear a mask when nursing the baby. This mask does not in any way differ from those worn by the personnel of the obstetric department and the labour room; the mask must be changed for each nursing.

Nursing

A mature newborn baby is nursed for the first time six hours after birth; during this period the puerpera has a chance to take a little rest. The mother must be taught to place the child at the breast correctly during the very first nursing; the child must grasp with its mouth the whole nipple, as well as part of the mammary areola. Proper grasping of the nipple by the child prevents formation of fissures (Fig.158). During nursing the mother must see to it

Fig. 158. Nurse teaching the puerpera how to nurse the baby

Fig. 159. Puerpera nursing her baby in a sitting position; a footstool must be placed under the feet

that the breast does not cover the child's nose and does not interfere with the child's respiration.

Newborn children are nursed every 3-3.5 hours (this period approximately suffices to evacuate the stomach of a newborn child) with an obligatory 6-hour intermission during the night; weak children must be nursed every 2.5 hours (on the physician's prescription) also with a 6-hour intermission during the night.

A nursing mother must adhere to this regimen from the very first nursing; the child soon grows accustomed to it and after nursing sleeps until the next nursing; during the night the child sleeps until the morning nursing, which gives the mother a chance to rest during the night.

Before each nursing the mother must thoroughly wash her hands and swab the nipples with a sterile cotton tampon held with a forceps or wound on a stick and soaked in a 2 per cent boric acid solution or a 1 per cent potassium permanganate solution. Neither the breasts nor the child must be touched with unwashed hands.

The child must not be placed in the mother's bed without a clean diaper spread under the child.

During the first 2-3 days after childbirth the mother nurses the baby in a half-lying position and then while sitting in bed. As soon as the puerpera is allowed to walk, she nurses the child while sitting in a chair (Fig. 159). Subsequently she nurses the baby similarly at home.

In cases of flat or cracked nipples in which nursing is extraordinarily difficult and painful, and, especially, in cases of retracted nipples (see Fig. 78) a glass nipple shield with a rubber nipple has to be used (see Fig. 118). The nipple shield must be sterilised (boiled) before each nursing.

During nursing the child must be placed at each breast alternately and kept there until the breast is completely drained. If the child does not suck with sufficient vigour and the breast retains a lot of milk after nursing, the milk must be drawn off by hand (see Fig. 119) or, in the last resort, with the aid of a sterilised (boiled) breast pump (see Fig. 120). The better a breast is drained, the better it functions. The amount of milk sucked by the child during a nursing can be ascertained by weighing the child before and after the nursing.

During the first week each nursing takes 20-25 minutes; subsequently, if the child is in good condition, the nursing lasts 15-20 minutes.

During the first week a normally developing child sucks the following amounts of milk: first day—80 ml, second day—80×(2—1), third day—80×(3—1), etc., i.e., 80 ml multiplied by the number of days after birth minus 1. Thus, by the seventh day the child receives 80×(7—1), i.e., 480 ml of milk. The foregoing formula applies only to the first seven days. From the second week the child's daily milk requirement increases 50 ml a week; thus, the daily milk requirement during the second week is 550 ml, during the third week—600 ml and during the eighth week—850 ml.

The daily norm is divided into the number of nursings and the amount of milk the child must receive in one nursing is thus determined.

Care of the Eyes, Ears, Nose and Mouth

The child is washed every morning with boiled water.

The child's *eyes* are washed with boiled water or a 2 per cent boric acid solution; each eye must be washed separately and with separate cotton. If a purulent discharge is observed, it must be immediately reported to the physician,

and the eye with the purulent discharge must be washed last. The eyes must be washed from the lateral margins medially (Fig. 160).

The *ears* (the external auditory meatus is implied) must be kept clean. The child's auditory meatus is very narrow and the mucosa lining the meatus is very delicate, for which reason the toilet of the ears must be made very care-

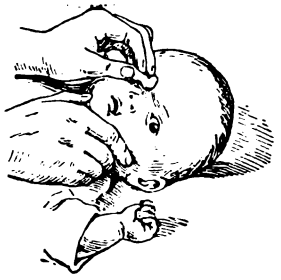


Fig. 160. Washing the newborn's eyes

Fig. 161. Cleaning the child's nose with a cotton tampon slightly moistened in vaseline oil

fully, using only soft cotton plaits. A hard object (matchstick, hairpin) may perforate the tympanic membrane or injure the wall of the auditory meatus.

If a child has a purulent discharge from the ear, it must be first of all reported to the physician and the ear must be carefully watched so that no pus accumulates in the external ear. For this purpose the external auditory meatus is cleaned more frequently with a cotton plait.

The *nose* of a nursling must also be kept clean. Even small crusts in the nose may interfere with respiration and cause the child to snore.

The mucous membrane of the nose is even more delicate than it is in the external auditory meatus, for which reason all manipulations in the nose must be performed with extreme caution. To clean the child's nostrils, cotton plaits slightly impregnated with vaseline oil are used. Such cleaning (Fig. 161) somewhat irritates the mucous membrane and causes sneezing during which the crusts become detached.

In cases of severe coryza the skin under the nose must be coated with vaseline to prevent it from irritation.

The *mouth* must not be swabbed because this is harmful (irritation of the mucous membrane, introduction of infection). Thrush which sometimes develops in the child's mouth indicates that the child is improperly nursed and poorly cared for. In cases of thrush it is not advisable to clean the mouth, but only lightly to swab the affected points with a cotton tampon soaked in a 10 per cent borax solution and glycerin.

If the newborn child contracts any disease, the nurse of the children's room at once isolates the child and summons the pediatrician; if the latter is absent, she calls the physician on duty. The physician takes suitable measures and, if the child dies, ascertains its death and makes a corresponding entry in the case histories of the mother and child, indicating the day and hour of the death and its causes. In collective farm maternity homes this is done by a midwife.

Discharge of the Newborn

Before discharge from the maternity home the child must be shown to its mother naked. The child's case history contains notes indicating the deviations (if there are any) from normal (chafing, discharge from the umbilical wound). The mother must be given all the necessary instructions pertaining to the care of the child. This is usually done in the form of a talk to a group of puerperas being discharged. The nurse tells the puerperas to which maternity health centre they are to apply for advice in the future. If the child is, for some reason or other, in need of medical observation from the very first days after its discharge from the maternity home, the nurse informs the infant health centre about it beforehand and the infant health centre establishes special patronage of the child.

Upon discharge the mother is given the following advice pertaining to the care and nursing of the child:

1. Not to touch the dressing on the umbilical wound, since the dressing will be changed by the community nurse.

2. Not to bathe the child without permission of the infant health centre physician.

3. To make the child's toilet before each nursing, i.e., to wash its private parts with warm water, carefully wipe them and coat the skin folds and buttocks with vegetable or vaseline oil.

4. To nurse the baby during the same hours as in the maternity home and subsequently to follow the instructions of the physician of the infant health centre.

5. In cases of coughing and coryza to wear a gauze mask over the nose and mouth during nursing and caring for the child.

6. Not to kiss the child on the lips or face.

7. To keep the bed, diapers and all other things used in caring for the child clean and in good order.

8. To arrange a little corner for the child at home—for the bed, swaddling table, and locker for the linens and other accessories.

9. To air the room and the child's bedding as often as possible.

10. If the child takes sick, to summon the physician from the infant health centre.

The puerpera receives all other information pertaining to the subsequent regimen and care of herself and the child from the physician of the maternity and infant health centres.

Children are now discharged from maternity homes only after examination by the district pediatrician. This makes for continuity of observation of children after their discharge from maternity homes.

A mature child and its mother are discharged from the maternity home no sooner than the ninth day after birth and only if the temperature, weight and general condition are normal. Premature children remain in the maternity home longer (see p. 223).

During the discharge of the child from the maternity home the child's mother and the nurse on duty sign its case history.

Model Daily Routine of the Newborn Children's Department (Ward)

5 : 30—6 : 30 a.m.	Measuring the temperature. Preparation of the children for the first nursing
6 : 30—7 : 00 „	First nursing. First cleaning and airing of the wards
8 : 30—9 : 30 „	Preparation of the children for the second nursing
10 : 00—10 : 30 „	Second nursing
10 : 30 a.m.—0 : 30 p.m.	Examination of the children by a physician.

	Administration of the physician's prescriptions
0 : 30—1 : 00 p.m.	Preparation of the children for the third nursing
0 : 30—1 : 30 „	Physician's visit to the mothers
1 : 00—1 : 30 „	Third nursing. Second cleaning and airing of the wards
3 : 30—4 : 30 „	Preparation of the children for the fourth nursing. Administration of the physician's prescriptions. Measuring the body temperature
5 : 00—5 : 30 „	Fourth nursing
7 : 00—8 : 00 „	Preparation of the children for the fifth nursing
8 : 00—8 : 30 „	Fifth nursing. Third cleaning and airing of the wards
10 : 30—11 : 30 „	Preparation of the children for the sixth nursing. Administration of the physician's prescriptions
11 : 30 p.m.—12 : 00 midnight	Sixth nursing

Notes. 1. Nursing the newborn every 3.5 hours, i.e., six times a day, is recommended only for healthy and well-sucking mature babies if their mothers have enough milk. Premature, traumatised and weak children are prescribed by a physician a special nursing regimen in accordance with their condition.

2. The pediatrician must inform the mothers of the health of their newborn children. The physician's talks must be of an explanatory nature and must not upset the mothers. The mothers of sick children and children with developmental anomalies must be treated with particular consideration.

Regimen in the Children's Wards and Personal Hygiene of the Attending Personnel

A stable temperature of 20-22°C must always be maintained in the children's wards. In summer the windows must be shaded and the wards aired during the cooler hours of the day.

Overheating, like overcooling, is harmful to the health of the children and reduces their resistance to infection.

The children's wards must be well ventilated. In winter, when the children are taken out for nursing, the windows must be opened. In summer the windows must be open all the time.

The beds and, especially, the mattresses must be disinfected without fail after the discharge of each child. In the absence of disinfection chambers the mattresses are hung out in the open air where they must be kept for at least eight hours.

The children's wards are cleaned regularly when the children are taken out for nursing. The floors are scrubbed with hot water and the furniture is cleaned with a moist rag. The soiled diapers are placed in galvanised iron tanks which are carried out after each diapering (6-7 times a day) and are washed with a disinfectant. In addition to daily cleaning, the newborn children's department has a strict plan of cyclic cleaning of the wards; after the discharge of all children the ward is thoroughly scrubbed and aired for at least 24 hours. After airing it is desirable to irradiate the children's ward, furniture and walls to a height of 1.5-2 m above the floor level with a portable mercury-quartz lamp (the burner must be kept within 60-80 cm of the irradiated surface).

The walls in the children's rooms, as in all the other premises of the maternity home, must be whitewashed every year.

The children's linens, especially the diapers and vests, must be immaculately clean. During washing the linens must be boiled, well rinsed and thoroughly ironed on both sides with a hot iron or sterilised in an autoclave. The diapers used for the first toilet must be sterilised; if they cannot be sterilised, they must be ironed on both sides with a very hot iron. The diapers and babies' linens must not be sent to the laundry which washes the linens of other medical establishments, especially, for patients with purulent and infectious diseases.

The bottles, cups, glasses, spoons, nipples, tongue depressors, etc., are thoroughly washed and always boiled after each time they are used. The water and various solutions which are sometimes given to children must be freshly prepared, no more than one day old and properly boiled.

The method of keeping and using the solutions must exclude the possibility of their contamination and, especially, infection.

Human milk may also constitute a source of infection for newborn children if it is drawn off without due observ-

ance of the rules of asepsis and if it is not kept under proper conditions.

The personnel of the newborn children's department undergo periodic medical examinations in keeping with existing laws and are examined without fail by a venereologist and a phthisiologist (including X-ray examination). In cases of pyrexia, acute nasopharyngeal catarrh or purulent affections of the skin and eyes the personnel are not allowed to care for the newborn. Nor are persons, who are in contact with infectious patients, or carriers of bacilli allowed to work with newborn children.

Before the beginning of work the midwives and nurses take a shower, put on a clean cotton dress and fresh gown, clean and trim their nails and thoroughly scrub their hands and forearms up to the elbows with soap and a brush. The hair must be neatly combed and covered with a kerchief.

CARE OF THE PREMATURE BABY

The mortality of newborn children during the first week of life is essentially accounted for by that of the prematurely born children, for which reason special attention must be devoted to this group of the newborn.

The prematurely born child differs from the mature child by a number of external signs. These signs are the more pronounced, the lower the weight and the shorter the height of the premature child. Children weighing less than 2,500 g (up to 1,000 g) and measuring less than 46 cm (up to 36 cm) at birth are considered premature.

Subcutaneous fat is usually deposited in the fetus during the last months of pregnancy, for which reason prematurely born babies are very thin. The skin of a premature baby is thin and in some places wrinkled; the wrinkles on the face lend the child a senile appearance. The entire skin is abundantly covered with a fluff. The head is large and has a high forehead; the chest is narrow, the limbs are long and the navel is located low. The auricles of the ears hang down because of underdevelopment of their cartilages. The scrotum is empty since the testes have not yet descended and are somewhere in the abdominal cavity or in the inguinal

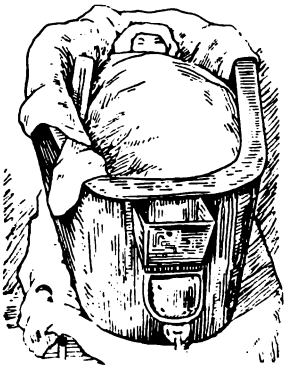


Fig. 162. Premature baby in a cuvette

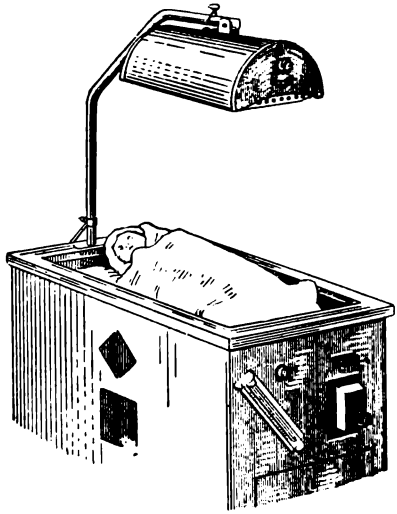


Fig. 163. Electric cuvette

Fig. 164. Premature baby in bed, surrounded with hot-water bottles

canals. In girls the vaginal entrance is open and the labia minora protrude from under the labia majora.

Premature babies are very sluggish, inactive and asleep most of the time; their respiration is shallow and the voice thin and squeaky.

In addition to the foregoing external characteristics, the prematurely born babies have internal disorders. Care of these babies involves particular difficulties connected with their low body temperature (35°C and lower), which is due to insufficient heat production, and its intense loss (absence of a fatty layer) owing to inadequate regulation as a result of underdeveloped cerebral centres. While infection is the most frequent cause of pyrexia in mature babies, in the prematurely born it takes place, on the contrary, at a low body temperature. Pyrexia in premature babies is often caused by overheating (with hot-water bottles), if the attending nurse is not sufficiently attentive.

Owing to underdevelopment of the respiratory system, premature children often have attacks of asphyxia—their breathing suddenly becomes shallow, spasmodic and with long pauses, and their skin turns blue. These cases require immediate aid—a hot bath (40-41°C), careful artificial respiration, injection of cytitone and inhalation of oxygen.

The foregoing clearly shows that the prematurely born require extraordinarily careful attention and observation.

Mortality among premature babies can be still more reduced by suitable measures, carried out in good time, and proper care. A decisive role in this important work is played by the nurse.

In cases in which premature labour is only beginning it is necessary to prepare beforehand two warm sterile diapers and two warm blankets. The born baby is placed in a warm sterile diaper and is covered with a similar diaper. The umbilical cord is tied and cut only after cessation of pulsation in it.

Before going to the labour room to bring the child the nurse must place a hot-water bottle in its bed.

Toilet of the Premature Baby

This procedure has to be carried out carefully and rapidly, to avoid cooling the child. During this procedure it does very well to use a heater or to place hot-water bottles (not too hot) under the child. To avoid burning the baby, the hot-water bottles are wrapped in thick towels.

Fig. 165. Feeding a premature baby through a nipple

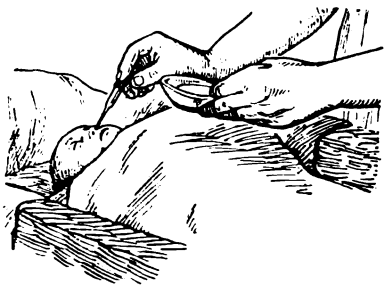


Fig. 166. Feeding a premature baby with a pipette through the nose

The nurse rapidly applies a bandage to the umbilical cord, examines, measures and weighs the child.

Then she dresses the child, swaddles it in warm diapers and a warm blanket and places it in a cuvette (Fig. 162)—a tub with double walls and hot water (65-70°C) circulating between the walls, or an electric cuvette (Fig. 163). If a cuvette is not available, the swaddled baby must be placed in bed and surrounded with hot-water bottles (Fig. 164). The bed of the prematurely born baby must be warmed beforehand.

Large maternity homes have special, suitably equipped wards for premature babies, while small maternity homes partition off part of the ward with a glass partition. The ward for prematurely born children must have a temperature of 22-24°C and must be well ventilated. Sev-

eral open vessels with water are placed in the ward to maintain sufficient humidity. The ward must be well lighted so that the cyanosis developing in a child may be noticed in good time; it is also necessary to keep in readiness oxygen bags in clean covers.

If the child is kept warm by means of hot-water bottles, the nurse must see to it that they do not leak so as not to scald the child. It should be remembered that a prematurely born child does not cry even when scalded. The temperature in the child's bed is usually controlled by means of a room thermometer placed on the child's chest under the blanket. Since the premature baby's skin is particularly delicate, the linens must be soft. Flanel diapers, flanel vests and soft woollen blankets must be used. The linens must be warmed by means of hot-water bottles. The swaddling and the medical examination must be performed under a heating lamp or on hot-water bottles (carefully!) to avoid cooling the child.

Feeding the Premature Baby

The feeding of a prematurely born baby must begin 4 hours after birth; the baby must be fed 8-10 times a day. During the first days of life a premature baby receives 200 ml of milk per 1 kg of weight a day. The children who suck well are given the breast and those who cannot suck the breast are fed with human milk from a bottle with a rubber nipple (Fig. 165) or from a spoon. But if the baby cannot suck, it is fed either through the nose by means of a pipette (Fig. 166) or through a feeding tube (Fig. 167).

The *rubber nipple* is punctured with a red-hot needle; the hole must be large enough to pass large drops of milk; the milk must be warm (like milk fresh from the cow).

If the child is fed *with a spoon*, a small, slightly elongated teaspoon is used. The bottle with human milk is placed in a vessel with warm water so that the milk stays warm during the feeding. The child is given to breathe oxygen before and after feeding.

The *pipette* must be sterilised (boiled) before use. The milk is drawn into the pipette and then squeezed out in drops on to the child's upper lip close to the left and then the right nostrils without introducing the pipette into the nose.

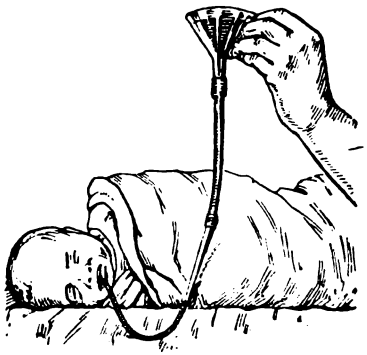


Fig. 167. Feeding a premature baby through a feeding tube. The tube is introduced with the baby lying on its side

To feed the baby through a *feeding tube*, a soft rubber catheter (Nos. 13-15) is used; the catheter is connected through a short glass tube (4-5 cm) with another catheter which is in its turn connected with a glass funnel. A long feeding tube connected with a funnel may be used. The feeding tube must be soft. The end of the feeding tube is coated with vaseline and introduced through the mouth (see Fig. 167) into the esophagus to a depth of 12-13 cm without using any force; it is best to do this when the child is asleep. The warm milk is poured through the funnel continuously to avoid simultaneous introduction of a large amount of air. After the end of feeding, which lasts 3-4 minutes, the feeding tube is quickly removed.

Before introducing the feeding tube and after the end of feeding, when the feeding tube is removed, the child is given to breathe oxygen for 10-15 seconds. It is particularly important to remember this when feeding children who show signs of cyanosis.

Children who are nursed must be carefully weighed before and after each nursing.

Prematurely born babies are not discharged from the maternity home until 14 days after birth. Weak babies who cannot suck are detained in the maternity home together with their mothers for longer periods.

On discharging a prematurely born baby the mother must be taught how to take care of the baby at home. The mother must maintain the necessary temperature in the room where the baby is kept and must be able to feed the baby. Everything the baby needs (linens, hot-water bottles, thermometer, bath) must be prepared at home in advance.

When sending the baby home care must be taken that

the baby is not exposed to cold on the way, for which purpose it must be warmly dressed and wrapped up.

The maternity home informs the infant health centre of every premature baby 3-4 days before its discharge so that the community nurse of the infant health centre may in due time prepare a suitable environment at the child's home and that careful observation of the child (by the physician and nurse) may be established from the very first day of its arrival home.

CARE OF NEWBORN CHILDREN WITH INTRACRANIAL HEMORRHAGES

Intracranial hemorrhages constitute a frequent cause of intrauterine death of the fetus during childbirth and one of the most frequent causes of child mortality during the first hours and days after birth. Most of the intracranial hemorrhages are observed in prematurely born children, as well as in children whose mothers were affected during pregnancy with nephrosis, influenza or other acute infectious diseases.

Intracranial hemorrhages, as also hemorrhages into other organs of the fetus, are due to insufficient development of the vascular wall, underdevelopment of the elastic fibres in it. These hemorrhages occur in newborn children mainly in cases of greatly prolonged (more than 24 hours) or, on the contrary, excessively rapid (6-8 hours) labour and labour involving surgical intervention (application of forceps, version, etc.).

Minute multiple hemorrhages easily occur during prolonged labour and are due to congestion in the veins of the cranial cavity; they may also take place during rapid labour when the head, before having a chance to assume its configuration, rapidly moves through the birth canal during vigorous uterine contractions.

The clinical pictures of hemorrhages vary with the point of vascular rupture and degree of the hemorrhage.

In cases of extensive hemorrhages, especially in the region of vitally important centres, the child dies during the first hours or days after birth, whereas in cases of minute

hemorrhages there may be no clearly marked symptoms indicating a hemorrhage either at birth or even during the first two days after birth. The symptoms appear only on the second or third day, usually because of the movements performed during transportation, swaddling and nursing of the child, these movements probably increasing the hemorrhage.

Symptoms of hemorrhages. In connection with the injuries to the central nervous system in cases of intracranial birth trauma disorders of the functions of different organs and systems are observed. One of the basic symptoms of intracranial trauma is a disturbance in the rate, rhythm and depth of respiration. The respiratory rate sometimes reaches 100 per minute; the respiration may be shallow; in a number of cases it becomes uneven or spasmodic.

In cases of intracranial trauma pallor and cyanosis of the skin are observed in most children during the very first day after birth.

A mature baby displays marked excitement on the first day. The baby cries, does not sleep, its eyes are open and it does not suck. Convulsions in the form of twichings of various facial muscles and of the arms and legs appear; nystagmus and strabismus are observed; between the attacks of convulsions the child seems to calm down, but at the appearance of the next attack begins to cry again, its respiration becomes shallow and rapid and an attack of asphyxia takes place—the face and then the whole body become cyanotic. These symptoms of excitement are observed during the first three days after birth, following which the exact opposite takes place. The child ceases to cry, lapses into a depressed sleepy state and ceases to swallow; the convulsions cease, respiration becomes uneven and shallow, the attacks of asphyxia recur more frequently, and the skin becomes pale and has a cyanotic tint; the child does not react to stimuli, its limbs are continuously in a position of flexion and it is only with difficulty that they can be extended; the body temperature drops to 35.6°C and in some cases, on the contrary, rises to 39-40°C. If all the foregoing symptoms last more than 5 days, the child usually dies.

In prematurely born babies the symptoms of intracranial hemorrhage are of a somewhat different character. Usually

there is no period of excitement (uneasiness, convulsions, etc.); sometimes a tremor of the upper and lower limbs appears and increases when the latter are touched. The child is very sluggish from the very first day of life, does not suck, does not swallow, does not cry, is always asleep, breathes poorly, frequently turns blue and has dull heart sounds; it is difficult to keep the child warm, although it is surrounded with hot-water bottles; the child's feet are cold and the body temperature scarcely reaches even 36°C. Sclerema (hardening of the skin on the limbs, face and back) and scleredema (indurated edema of the skin) appear during the very first day.

However, slight hemorrhages, which at first produce no symptoms of birth trauma at the time of birth, are observed more frequently. Secondary hemorrhages which aggravate the child's condition and which are mostly due to improper care occur only 2-3 days later. It is the duty of the physician and midwife not only to identify in due time even the slightest signs of hemorrhage, but also to foresee the possibility of traumas connected with the character of labour. For example, in cases of labour involving application of forceps, in labour with breech, face and other irregular presentations of the fetus, after version in cases of transverse position of the fetus, and in cases of asphyxia a possibility of the aforesaid birth trauma must be suspected even if the child has displayed no signs of it during the first day. Such children must be immediately placed in a special ward or cubicle. The ward must be light and well ventilated, and have a temperature of no less than 20°C. The ward must have in readiness everything that the care of such a child may require: an oxygen tent, feeding tubes and pipettes for artificial feeding, a sterile syringe with needles, caffeine, cytitone and lobeline.

In cases of birth traumas or if the possibility of a birth trauma is suspected the child must be placed under conditions ensuring rest and normal respiration immediately after birth. The child's head must be slightly raised, the child must not be tightly swaddled and his arms must not be pressed against the chest.

The child's toilet must be made in bed and extremely carefully, without superfluous movements.

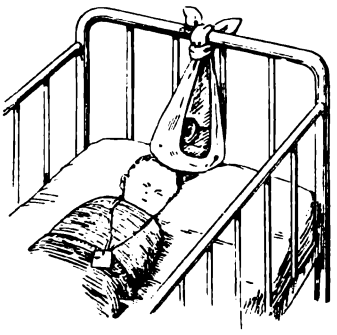


Fig. 168. A suspended ice bag

If the child has convulsions, an ice bag is suspended at the head of the bed so that it may but lightly touch the child's head (Fig. 168) and a hot-water bottle (temperature of water not exceeding 60°C) is placed at the child's feet. Every hour the child is given oxygen to breathe through a funnel; at the time the child is breathing oxygen it must be unswaddled so that it may breathe more deeply.

Such newborn children are not given the breast for the first 3-4 days. Depending on their condition, they are fed human milk in bed through a nipple, pipette or feeding tube (by the physician's prescription).

As a result of hemorrhages the newborn may have paresis of the facial (sagging of a corner of the mouth) or of the brachial (pendulous arm) nerves and sometimes paralysis of the limbs. In such cases the children must be given complete rest and the best possible care.

Upon appearance of asphyxia it is necessary (before the arrival of a physician) to administer cytitone subcutaneously and give the child oxygen to breathe.

The following medicines are administered in cases of hemorrhages: vitamin K in the form of a solution and in a dose of 3-8 drops b.i.d. for 3-5 days after birth, a 10 per cent calcium chloride solution in a dose of one teaspoonful 6-8 times a day for 10 days after birth, vitamin C (ascorbic acid) in a dose of 0.05 g b.i.d., vitamin B_1 in a dose of 0.0025 g b.i.d. with glucose or human milk (from a spoon).

In cases of general excitement and convulsions it is advisable to give the child luminal per os in a dose of 0.008 g b.i.d., and during frequent convulsions to administer intramuscularly 1 ml of a 20 per cent magnesium sulfate solution.

Intramuscular administration of penicillin in a dose of 50,000-60,000 u. a day for a period of 3-4 days is recommended for the purpose of preventing pneumonia.

The most important thing is careful, attentive and skilful handling of the child during the first hours and days after birth; in most cases this helps to avert a sad outcome.

ASPHYXIA AND RESUSCITATION OF THE NEWBORN

Disorders of placental blood circulation, which occur in cases of prolonged labour, compression of the umbilical cord, premature separation of the placenta, pyrexia of the parturient woman and certain other diseases, may give rise to symptoms of impending asphyxia in the fetus due to insufficient supply of oxygen. If this condition lasts for a relatively long period, asphyxia results and the fetus dies. Incipient intrauterine asphyxia is manifested primarily in modified fetal heartbeats. Instead of the normal and rhythmic 120-130 heartbeats per minute, dull sounds, at first accelerated and then, on the contrary, decelerated with a disturbed rhythm are auscultated. In cases of impending and incipient asphyxia measures to prevent asphyxia are taken and, under suitable conditions, the labour is terminated by surgical intervention (application of forceps, incision of the perineum, etc.).

To prevent intrauterine asphyxia of the fetus, a so-called triad is used: the parturient woman is given oxygen to breathe every 5 minutes; simultaneously 50 ml of a 40 per cent sterile glucose solution is administered intravenously or the parturient woman is given to drink hot water which contains 50 g of glucose powder or 5 lumps of sugar in solution; 1 ml of a 10 per cent cardiazol solution is also administered intravenously. Moreover, it is advisable to give the parturient woman 0.3 g of ascorbic acid per os. The triad is repeated within an hour. If the triad proves ineffective when used the first time, it is repeated within 10-15 minutes and an attempt is made to terminate the labour by surgical intervention.

Two degrees of asphyxia are distinguished in accordance with the external appearance of the born child. In cases of first degree asphyxia, so-called *asphyxia livida*, the child's skin is bluish and the muscles are relaxed. Upon closer examination of the left half of the chest it is possible to

observe heartbeats and by placing the fingers on the child's left mammillary region to feel the heartbeats.

In cases of second degree asphyxia, or *asphyxia pallida*, the child is born pale and only its lips are slightly cyanotic. The child's head and limbs droop, there are no reflexes, and cardiac activity is very weak. Asphyxia pallida is the graver of the two.

Resuscitation of the newborn. In resuscitating the newborn child born in asphyxia it is necessary strictly to keep to the following order: in the first place the child must not be cooled and must not be hastily separated from its mother because it continues for some time to receive oxygen from the mother through the placenta, for which reason the puerpera is given to breathe oxygen. The child is immersed in a bath with the water at 38-39°C, the bath placed on the bed between the puerpera's legs (Legenchenko's method). The mucus is removed from the upper respiratory tract, after which respiratory movements are produced by light massage of the chest and, lastly, to enhance cardiac activity, if the latter is noted to be weak, 0.3 ml of a 10 per cent cardiazol solution is administered subcutaneously.

The respiratory tract is cleansed as follows: the child is held in the hands, face down, in the bath, owing to which the mucus partly flows out spontaneously; in addition, a compressed sterile rubber balloon is inserted, not deeply, in the child's mouth and then inflated, the mucus being carefully aspirated. If this proves insufficient, the mucus is aspirated by means of a balloon through an elastic catheter introduced into the trachea. The external end of the catheter is attached to a compressed rubber balloon which by expanding aspirates the contents of the upper respiratory tract. If there is a lot of mucus, the aspiration has to be repeated, for which purpose the balloon is removed, the mucus is extracted from it, and the catheter is attached to the compressed balloon again.

When aspirating mucus from the nose, a compressed balloon is merely brought close to the nostrils without introducing its nozzle into the nose.

If respiratory movements appear in the child, the whole thing usually ends with this. No tapping is necessary.

In cases of *asphyxia livida* this is quite enough and after

removal of the mucus the child in the warm bath even begins to cry. After this the umbilical cord is tied and cut, and the child is separated from the mother.

In cases of *asphyxia pallida* the foregoing measures prove inadequate. The puerpera inhales oxygen. Without separating the child from the mother, after removing the mucus

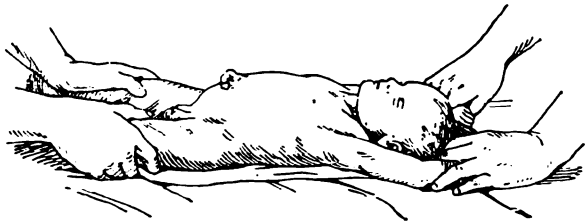


Fig. 169. Resuscitation of a newborn by the Silvester method. First part—inhalation

from the upper respiratory tract, as was shown above, the physician immediately administers into the vein of the umbilical cord 10 ml of a 40 per cent glucose solution, 2 ml of a 5 per cent ascorbic acid solution and 0.3 ml of a 1 per cent lobeline solution, all in one syringe (V. Khmelevsky). At the same time the child's chest is rhythmically compressed 18-20 times per minute without taking the child out of the warm bath, and 0.5 ml of a 10 per cent corasole or cardiazol solution, 0.5 ml of a 10 per cent caffeine solution and 0.3 ml of a 1 per cent adrenalin solution are administered subcutaneously. If this is not enough, the child is separated from the mother and artificial respiration is administered as a last resort.

To resuscitate the child in cases in which the afore-described methods fail, intra-arterial infusion (into the umbilical artery) of 40-50 ml of blood of the 0 (1) blood group, 10 ml of a 40 per cent glucose solution, 2 ml of a 5 per cent ascorbic acid solution and 2-3 ml of a 10 per cent calcium chloride solution has now been administered for the last few years.

Silvester's method of artificial respiration. Of the existing methods of artificial respiration Silvester's method is usually employed to resuscitate the newborn (Figs. 169 and

170). The child is placed in a supine position on a table covered with a sterile napkin, the child's head slightly lowered and lying on something soft; the child's forearms are grasped and both arms are raised and moved to a position along the sides of the head where they are held for several seconds (inhalation). Then the arms are bent in the elbows and lowered, being slightly pressed against the lateral walls of the chest (exhalation). These movements

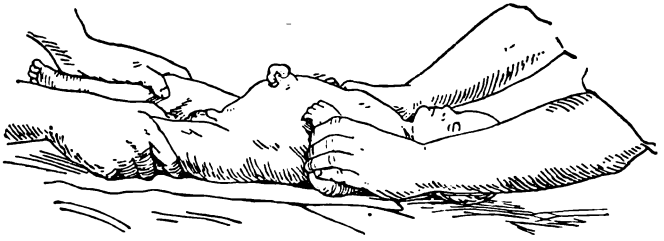


Fig. 170. Resuscitation of a newborn by the Silvester method. Second part—exhalation

must not be made too rapidly (no more than 18-20 per minute). In the meantime the child's legs are held by an assistant. After 18-20 movements the child is carefully placed in a warm bath. Within 1-2 minutes, if the child has not begun to breathe, artificial respiration by Silvester's method is resumed. At the onset of respiration the child is given oxygen.

The child must not be thrown up because this may produce a cerebral hemorrhage or increase the hemorrhage which in such cases has not infrequently already occurred.

The attempts at resuscitation must be continued until at least weak fetal heartbeats are auscultated. It often happens that the child is resuscitated within 1-1.5 hours after birth.

After the requisite toilet the child must be placed in bed and surrounded with hot-water bottles; the nurse must see that the child sustains no burns.

The delivery room or the adjacent ward must always have in readiness all that is required for resuscitating the newborn, namely, a clean special bath-tub with water at

38-39°C, a sterilised (boiled) elastic catheter and a rubber balloon for aspirating the mucus from the upper respiratory tract wrapped in sterile gauze and kept in a clean, dry, closed vessel; lobeline, cytitone, oxygen and cardiacs (camphor, caffeine), a boiled syringe with two tested needles; a hot-water bottle; a table covered with a clean sheet or diaper in case it is necessary to administer artificial respiration.

WEANING THE CHILD

Children are usually nursed until one year of age. By that time they receive breast milk twice a day. Children are weaned gradually. If they receive breast milk twice a day, once a day (usually in the morning) it is replaced with cow milk with sugar (a teaspoonful of sugar per glass of whole cow's milk). Within a week the children begin to be given only cow's milk.

Prolonged nursing is no good for the child and impairs the mother's health. Sometimes mothers prolong the nursing for the purpose of preventing pregnancy; however, this fails to produce the desirable results. Children must not be weaned during the hot time of the year or when they are unwell. If a recently weaned child has taken sick, nursing must be resumed. This can very well be done even if the mother thinks that she has no milk. By placing the child at the breast and, if the child does not suck, by persistently drawing the milk off it is usually possible to evoke and intensify lactation. It should be remembered that even a little of breast milk is an important therapeutic agent for a sick child.

As soon as the mother ceases to nurse the child she must bandage her breasts tightly to terminate lactation. During the first two or three days after weaning the child the mother must drink less. If the breasts become considerably indurated nonetheless, she must take a laxative (Magnesiae sulfuricae [Magnesium sulfate], Natrii sulfurici [Sodium sulfate], $\overline{aa}$ 15.0 per dose).

CHAPTER XI

OBSTETRIC PATHOLOGY

The nurse may come across a patient who has to be administered urgent obstetric aid before the arrival of a physician or midwife, or before she is sent to the hospital. Even if not every nurse has to administer such aid herself, every nurse must be able, as far as possible, to identify obstetric pathology and be aware of its gravity; only under this condition will she understand what the physician is doing and will be a conscious and useful helper in his work.

TOXEMIAS OF PREGNANCY

All the aforementioned unpleasant phenomena observed during pregnancy (nausea, vomiting, sleepiness, itching, edema) are due, as was already mentioned, to the changes in the pregnant woman's metabolism. In a healthy woman all these phenomena usually soon disappear and the pregnancy is safely carried to the end. Sometimes, however, the female organism can not fully cope with the demands made of it by pregnancy. The aforesaid phenomena not only fail to subside, but, on the contrary, progress with the development of pregnancy and require proper medical aid. These morbid phenomena are classified under the general designation of *toxemias of pregnancy.*

The onset of toxemia in a pregnant woman is due to a number of factors the chief of which are the general condition of the organism, the condition of its nervous system, the endocrine apparatus and all the organs which in their

aggregate determine the resistance of the organism. In addition to these factors, the working and living conditions, the surroundings, etc., also play an important part in the onset of toxemia of pregnancy.

Early (during the first half of pregnancy) and *late* (during the second half of pregnancy) toxemias of pregnancy are distinguished.

Early toxemias include intense and prolonged salivation, frequent vomiting which sometimes becomes excessive, a number of cutaneous manifestations, etc.; late toxemias include *hydrops gravidarum*, *nephrosis*, *pre-eclampsia* and *eclampsia*.

All toxemia patients require very early hospital treatment.

Salivation (*Ptyalism*). Salivation may lead the pregnant women to a very grave condition. Sometimes such women secrete several glassfuls of saliva a day; they lose their appetite and a lot of weight and become so weak that they are forced to stay in bed. On the appearance of the very first signs of this disease such women have to be referred to a physician.

Vomiting (*Emesis*). Women not infrequently are nauseated and vomit from the very first weeks of pregnancy. Frequent, especially excessive vomiting (*hyperemesis gravidarum*) is observed rarely and is a grave disease which is connected with pregnancy and during which all symptoms of emaciation increase more rapidly. Of course, such patients are even more in need of timely treatment.

With the onset of nausea and vomiting it is necessary to confine the pregnant women to bed. It is important to make them eat by trying to satisfy their tastes in every possible way. As a rule, they must be hospitalised (or sent to a maternity home).

Not infrequently such patients cannot eat anything and vomit after every meal. In such cases they have to be administered nutrient substances, which are easily absorbed through the rectal mucosa (glucose, egg yolks, etc.), by rectal drip, or glucose with ascorbic acid subcutaneously or intravenously. All this can be done only by prescription of a physician. But if the vomiting does not cease and the pregnant woman continues to lose weight and her general

condition is turning for the worse despite the treatment, the question of discontinuing her pregnancy may arise.

Edema in pregnancy (*Hydrops gravidarum*). This form of toxemia is observed in the form of edema of the subcutaneous tissue during the last months of pregnancy. The edema may vary and sometimes may be very strongly pronounced. It is most frequently observed on the lower limbs, external genitalia and abdominal wall. There is also so-called *silent edema* which has the following mechanism of onset: during pregnancy, as was already mentioned, the permeability of the vascular walls and the ability of the connective tissue cells to retain water and salts increase, as a result of which the tissues more easily become edematous. In the beginning fluid is often retained only in the internal organs and tissues. Such silent edema may be discovered before the appearance of edema in the subcutaneous tissue if the pregnant woman is systematically weighed.

If there is only edema, it is usually enough for the pregnant woman to stay in bed for several days and limit the intake of liquids for the edema to disappear. The edema not infrequently reappears when the pregnant woman begins to walk, in which case the foregoing regimen is prescribed again.

Nephrosis in pregnancy (*Nephropathia gravidarum*). This disease is due to changes in the epithelium of the renal tubules. Nephrosis is most frequently observed during the first pregnancy. In this form of toxemia albumin appears in the urine and its content may sharply increase; hyaline casts, whose number also increases, are discovered in the sediment; sometimes granular casts appear. Chlorides and water are retained in the organism and as a result the edema is aggravated and the pregnant woman gains a good deal of weight. The arterial pressure rises. Usually all the foregoing phenomena disappear soon after childbirth.

The development of nephrosis, diagnosed in good time, may be arrested by a suitable regimen and diet; the development of nephrosis into a graver form of toxemia of pregnancy is thereby prevented.

Nephrosis is usually diagnosed during examination at the

maternity health centre where every pregnant woman must regularly report at the appointed time, especially, upon appearance of the first signs of toxemia of pregnancy. Upon discovery of albumin in the urine, considerable increase in weight, appearance of edema, and elevation of arterial pressure the pregnant woman must be placed in a ward for pregnant women at a maternity home or hospital.

Treatment of nephrosis consists primarily of confinement to bed and limitation of sodium chloride and water consumption; a salt-free dairy and vegetable diet, and in some cases one day's fast, is prescribed. Of medicinal agents magnesium sulfate is administered subcutaneously.

The patient's general condition needs most careful watching so that the increase in the symptoms of nephrosis (albumin) in the urine, elevation of arterial pressure, spasm of the vessels in the fundus oculi) may not be overlooked; it is on this that subsequent therapeutic measures and the possibility of preserving the pregnancy depend.

Pre-eclampsia. Sometimes the symptoms of nephrosis increase despite the treatment and to them are added subjective symptoms—headaches, epigastric pains, disorders of vision and sleep. This suggests the transition of nephropathy to the next and graver form of toxemia of pregnancy which is known as pre-eclampsia. In a number of cases this form seems to be a stage preceding eclampsia.

Eclampsia. This is the severest form of toxemia of pregnancy. It is observed mainly in primiparas, usually young healthy-looking women. Eclampsia may occur during pregnancy, labour and the puerperium.

By carefully observing the woman at the maternity health centre all through pregnancy and by thoroughly examining her it is possible to detect a number of signs which are precursors of eclampsia. These signs—albumin in the urine, edema of the limbs and even of the whole body, elevation of arterial pressure and considerable increase in weight—frequently do not particularly discomfort the pregnant woman and the latter therefore voices no complaints. Sometimes there are pains in the epigastrium and headaches. These signs suggest pre-eclampsia which may develop into eclampsia. To avoid this, such a pregnant woman must immediately be confined to bed and ensured complete rest and quiet;

the nurse must summon a physician or a midwife at once and continually stay at the patient's bedside.

To reveal such cases in good time and thereby, as far as possible, to prevent eclampsia, it is necessary to analyse for albumin the urine of every woman, even those who arouse no apprehensions, at least every two weeks during the last months of pregnancy; the pregnant women must be weighed and their arterial pressure measured as often. Suitable measures must be taken as soon as albumin is discovered in the urine, i.e., summon a physician or midwife, curtail or entirely prohibit consumption of meat, replacing it with vegetable food, limit proteins and fats and increase the amount of carbohydrates in the diet. Consumption of salt must be limited, a salt-free diet prescribed and sometimes a one day's fast must be resorted to. Such a diet combined with a general therapeutic-protective regimen very often helps to avoid eclampsia. It stands to reason that all these measures are prescribed by a physician, while the nurse carries them out under the physician's constant observation. Unfortunately, it is not always possible to prevent eclampsia by the aforementioned measures, and this is most frequently due to the fact that the pregnant woman is not under observation of a physician or midwife and applies for aid too late.

Eclampsia starts with a severe attack of convulsions, coma, and marked cyanosis of the face and upper limbs as a result of respiratory disturbances. The convulsions begin in the face: winking and then twitchings of the facial muscles; after this the convulsions spread over the entire muscular system; the neck becomes tense, the cervical veins dilate and a foam is discharged from the mouth; sometimes the foam is coloured with blood because the patient bites her tongue if no suitable measures were taken in good time. The pupils are dilated and poorly react to light; the temperature often rises to 39-40°C. The albumin content in the urine sharply increases, owing to which the entire urine in some cases coagulates in the test tube during boiling. The convulsive state, during which the patient grows increasingly more cyanotic because of extreme respiratory difficulties, lasts 30-60 seconds; then the convulsions gradually cease, the patient gasps for breath, exhales, her respiration begins to improve and the cyanosis disappears. Under

favourable circumstances the patient soon recovers consciousness. Not infrequently, however, the attacks recur, the patient does not recover consciousness and may die with symptoms of increasing pulmonary edema.

In most cases the attacks of eclampsia cease after the birth of the child and separation of the placenta, for which reason attempts are made to hasten delivery during eclampsia.

Any stimulus (noise, pain, light, etc.) may cause a repeated attack of eclampsia because of the extreme excitability of the patient's central nervous system. Eclamptic patients are therefore first of all placed in a separate, somewhat shaded room and attempts are made to maintain complete silence (to speak in whispers, walk on tiptoes, prevent squeaking and banging of the door, etc.).

Maternity homes have a special ward for eclamptic patients.

Elimination of all external stimuli considerably reduces the number of attacks. If no special mouth-retractor is available to prevent tongue-biting during attacks, it is necessary to place between the patient's teeth the handle of a tablespoon wrapped in gauze and to keep it there until the attack has ceased. The nurse must constantly be at the patient's bedside.

During attacks of eclampsia the patient is very restless and one person is sometimes unable to keep such a patient in bed, for which reason, if there is not enough attending personnel, it is necessary to tie the patient to the bed in two or three places with twisted sheets or long towels over the blanket.

If no midwife or physician is present, they must be urgently summoned. As a first aid measure, the nurse administers to the patient intramuscularly 20 ml of a 25 per cent magnesium sulfate solution (this may be repeated every four hours, but no more than four times a day). If no magnesium sulfate is available, the patient must be given, before the physician's arrival, a subcutaneous injection of 1 ml of a 1 per cent morphine hydrochloride solution to stop the attacks.

DEVIATIONS CONNECTED WITH AN ABNORMAL POSITION OF THE FETUS

Breech Presentation

A longitudinal position of the fetus with a cephalic presentation (head somewhat flexed) is considered a normal position; if the buttocks rather than the head are located at the pelvic inlet, while the fetus is in a longitudinal position, it is called breech presentation (see Fig. 62). Compared with cephalic presentation childbirth in cases of breech presentation result in a relatively high percentage of child mortality, asphyxias in the newborn, hemorrhages, puerperal diseases and extensive trauma of the birth tract. In cases of breech presentation labour very frequently has to be hastened and various forms of obstetric aid have to be resorted to in the interests of the fetus and sometimes also of the mother.

In cases of breech presentation the fetal head is very rarely born spontaneously; not infrequently its birth is retarded and the physician or midwife resorts to manual aid in order to disengage it. To extract the head, manual aid is administered as follows: the woman is placed across the bed, her feet resting on two stools or chairs; the born body of the fetus is "set" by the person assisting at the birth (as shown in Fig. 171a)astride his (her) left forearm; the index of the left hand is introduced into the vagina and upon reaching the child's mouth is inserted in it; the finger carefully presses on the lower jaw, draws it closer to the baby's chest and thus flexes the head. With the index and middle fingers bent in the form of a fork and placed on the child's shoulders, as shown in Fig. 171b, the child's head is at first drawn somewhat downward (thus bringing the occiput under the symphysis) and then horizontally outward and slightly upward. As soon as the occiput has been brought under the symphysis and the mouth has emerged from the vaginal entrance, the fetal body is raised and the chin, face, forehead and vertex roll out over the perineum.

As a rule, *pregnant or parturient women in whom a breech presentation has been diagnosed must be sent in good time to a maternity home or hospital.*

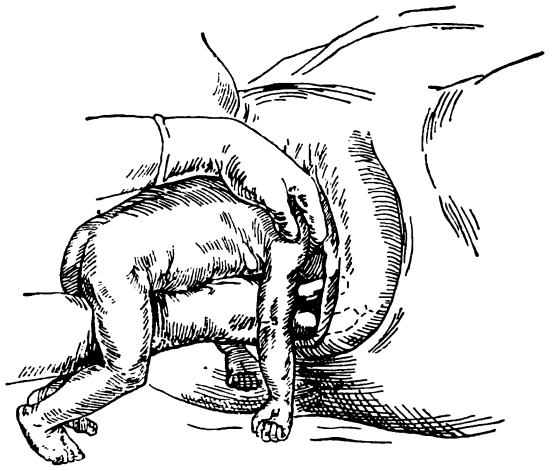


Fig. 171a. Extraction of the fetal head during labour with the fetus in breech presentation. First part

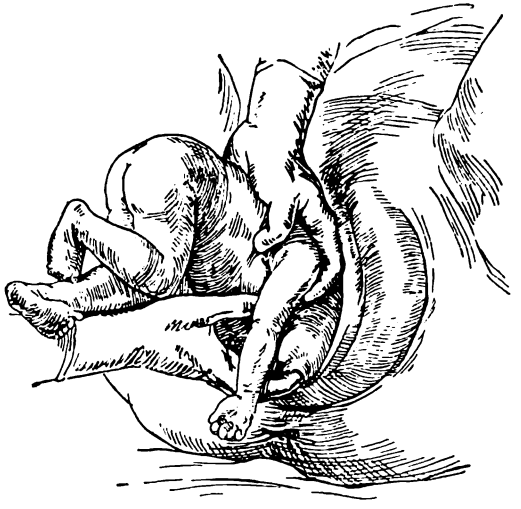


Fig. 171b. Extraction of the fetal head during labour with the fetus in breech presentation. Second part

Transverse Position of the Fetus

A position in which the fetus is located with its longitudinal axis transversely or obliquely to the length of the uterus is called a *transverse or oblique position* (see Fig. 63). During palpation of the abdomen above the symphysis the hand freely sinks into the body since there is no presenting part at the symphysis. Nor is a large part of the fetus palpated in the fundus uteri.

All pregnant women with an oblique or transverse presentation of the fetus must be referred to a hospital or maternity home, or a physician must be summoned to them in good time.

With the onset of labour, if the transverse position persists, the transverse presentation is changed at the requisite moment to a longitudinal breech presentation by an internal version which is known in obstetrics as a *podalic version*. This version may be performed only by a physician and in the last resort by a midwife.

There are also severe cases in which the bursting of waters has long since taken place, the contracting uterus has firmly enveloped the transversely lying fetus, one of the shoulders has entered the pelvic inlet and an edematous arm is sometimes sticking out of the vagina. In such cases, after prolonged contractions of the uterus its lower part has become excessively distended and thin, the lower uterine segment being very painful to touch. This is a so-called *advanced transverse position*. In cases of continuing uterine contractions a rupture of the uterus is likely at any moment.

In such cases it is necessary first of all to arrest or at least weaken further contractions, for which purpose the parturient woman is administered subcutaneously 1 ml of a 1 per cent morphine hydrochloride solution, and a physician or midwife are urgently summoned. If the parturient woman is sent to a hospital or maternity home by orders of the physician, the nurse accompanies her to the hospital (maternity home) taking a sterilised (boiled) syringe along in order to administer morphine once more on the way. An *embryotomy*—removal of the fetus cut into pieces—is performed in the hospital (p. 263).

Prolapse of Small Parts of the Fetus

If prolapse of some small part (arm, leg, umbilical cord) is observed in cases of cephalic or breech presentation, the parturient woman must immediately be sent to a hospital or a maternity home. The prolapsing part must be left as it is and be covered with sterile gauze or a napkin.

HEMORRHAGES DURING PREGNANCY, PARTURITION AND THE PUERPERIUM

These hemorrhages are extremely dangerous both as regards the character and frequency of complications, and threaten the life of the pregnant and parturient women, the puerpera and the child.

First aid in obstetrics always implies primarily cases of uterine hemorrhages. In many such cases lack of timely and skilled medical aid dooms the woman to death.

Hemorrhages in Early Pregnancy

Hemorrhages in early pregnancy are due in most cases to the onset of abortion. An *abortion* is usually characterised by two symptoms—hemorrhage and pains in the lower part of the abdomen. Threatened, incipient, incomplete and complete abortions are distinguished, according to the degree of separation of the embryo.

Threatened abortion. The pregnant woman complains of light pains in the lower part of the abdomen. Usually there are no sanguineous discharges as yet. The woman must immediately be referred to a physician.

Incipient abortion. In addition to pains in the lower part of the abdomen sanious discharges from the vagina appear. In this type of abortion there is a partial separation of the embryo. The woman must immediately be sent to a hospital.

Incomplete abortion. Thin blood and clots are profusely discharged. The patient must immediately be sent to a hospital to remove from the uterus the remains of the embryo

which prevent the uterus from contracting and are thereby conducive to bleeding. If there is a physician nearby, he must be immediately summoned and warned of the character of the affection.

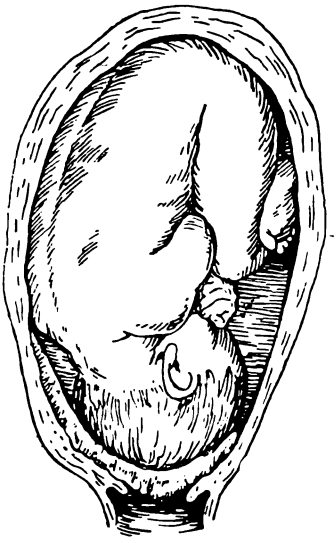


Fig. 172. Placental presentation

Complete abortion. The embryo has completely emerged, nothing has remained in the uterus and the hemorrhage has ceased; there is only a little sanious discharge. Not infrequently the women bring the emerged embryo along with them. It should always be remembered that parts of the embryo may have remained in the uterine cavity, for which reason such women must immediately be sent to a hospital where an exploratory uterine curettage will be made.

Hemorrhages in Late Pregnancy

During late pregnancy hemorrhages are most frequently caused by a partial separation of the placenta owing to its improper location. In such cases the placenta is at the bottom, near the internal os—so-called *placental presentation* (Fig. 172).

With the first contractions of the uterus and the slightest dilatation of the internal os the part of the placenta attached in this place immediately separates and a hemorrhage begins. Thus, not infrequently, at the end of pregnancy, with the woman in very good general condition, a hemorrhage begins even at night when the woman is asleep. The woman may not even feel the pains because slight uterine contractions which are entirely painless during pregnancy suffice to produce the aforesaid separation. The hemorrhage

ceases, but during a recurrent contraction of the uterus recurs. In such cases the pregnant or parturient woman must be sent to a maternity home or hospital as soon as the first sign of a hemorrhage appears.

The nurse must remember that placental presentation is the gravest and most dangerous labour complication for both mother and child. Without requisite and timely obstetric aid such cases usually end lethally.

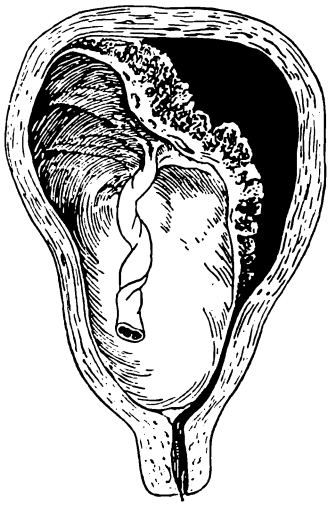


Fig. 173. Premature separation of the placenta

Hemorrhages During Labour

Sometimes hemorrhages may be caused by separation of the placenta even when the latter is normally located at the fundus uteri; this is a *premature separation of a normally located placenta* (Fig. 173) and is usually observed after the onset of labour and persisting uterine contractions. Symptoms of acute anemia (pale skin and a weak, rapid pulse) suddenly appear and the heartbeats of the fetus disappear. A slight vaginal hemorrhage is sometimes observed. It is necessary immediately to summon a physician without moving the parturient woman. If the fetal sac is intact, it has to be ruptured, for this may prevent further separation of the placenta.

Hemorrhages During the Placental Stage

Hemorrhages during the placental stage are due mainly to the fact that part of the placenta is strangulated in the contracted part of the uterus, while the other part of the placenta, already separated, hangs down, and bleeding from the vessels of the uterine wall, poorly contracted in

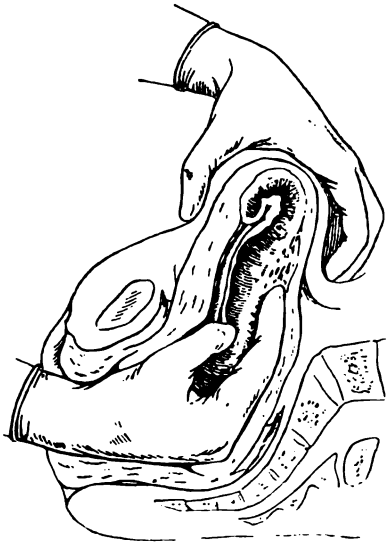


Fig. 174.
Manual separation of the placenta

this place, continues. Such strangulation most frequently occurs as a result of unnecessary premature stimulations of the uterus produced by all sorts of pressure exerted on it.

Another cause of hemorrhages during the placental stage is firm attachment of only part of the placenta. In such cases part of the placenta is separated while the firmly attached part remains connected with the uterus; the uterus does not contract and the vessels of the separated part of the placenta gape and bleed.

Profuse and unceasing bleeding (more than 250-300 ml of blood is lost) is observed in both cases and serves as an indication for immediate removal of the placenta. The Credé-Lazarevich kneading method is used for a rapid removal of the *separated* placenta in cases of profuse hemorrhages (see Fig. 110). To begin with, the urine is drained with a catheter and then the uterus is placed along the midline of the abdomen; the uterus is massaged with the right hand, the same hand grasping the contracted uterus so that the thumb lies on its anterior wall, the palm on the fundus, and all the remaining fingers on the posterior wall; the uterus is compressed and simultaneously crowded downward, in the direction of the vagina. If this method fails to remove the placenta or if the latter has not completely separated from the uterus, it *must be removed manually*. This operation during which the hand is introduced into the uterine cavity is connected with a risk of bringing in infection, and the hands and forearms must therefore be carefully scrubbed beforehand, as for any cavitary operation.

Technique of manual removal of the placenta. The external genitalia are washed and painted with iodine. The vaginal entrance is widely parted with the fingers of the left hand and the right hand, the finger-tips forming a cone, is quickly inserted in the vagina and then in the cervix and uterine cavity; the separated, hanging border of the placenta is felt for and an attempt is made to penetrate between the uterine wall and the separated part of the placenta by careful sawlike movements with the radial border of the hand (Fig. 174). In the meantime the left hand fixes the fundus uteri on the outside, thereby helping the right hand which is in the uterine cavity. After thus separating the entire placenta and before withdrawing the hand the walls of the uterine cavity are examined; if no placental lobules are found, the hand is withdrawn from the uterine cavity together with the separated placenta and the membranes.

On the one hand, manual removal of the placenta constitutes a great risk because of the possibility of introducing infection from the vagina into the uterine cavity, and, on the other hand, it requires sufficient experience to be carried out, for which reason this operation must, as a rule, be performed by a physician, or, in the last resort, by a midwife.

Postpartum Hemorrhages

After the birth of the child and separation of the placenta with the membranes the muscles of the uterus contract and the lumens of the gaping vessels of the placental area close up. In cases in which the uterine muscles happen to be weak the uterus contracts poorly and the bleeding continues; this is called *atonic bleeding.*

Postpartum hemorrhages most frequently occur when parts of the placenta are retained in the uterine cavity; these parts were overlooked because the puerpera was not examined thoroughly enough and were therefore not removed in due time.

Regardless of whether the hemorrhage is purely atonic or is a result of retention of parts of the embryo (placenta, membranes) it is necessary immediately to summon a physician or midwife and to massage the uterus until their

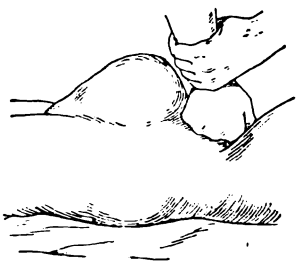


Fig. 175. Pressing the abdominal aorta with the fist

arrival. The uterus is massaged through the abdominal wall as follows: the fundus uteri is grasped through the abdominal wall with the palm of the right hand, the palm lying on the fundus, the thumb on the anterior surface and all the other fingers on the posterior surface of the uterus; the uterus is thus massaged with rotatory movements of the hand. Upon arrival the physician (or midwife) immediately examines manually the uterine cavity and removes from it (in case of retention) the retained parts of the embryo.

If the hemorrhage was caused by retention of parts of the embryo, it ceases after their removal because of good contraction of the uterus. A manual examination of the uterine cavity often alone leads to cessation of the hemorrhage.

Massage of the uterus sometimes causes the latter to contract well. Drugs stimulating contraction of the uterus—ergotin, pituitrin—are administered simultaneously with the massage. Ergotin is administered subcutaneously in a dose of 1-2 ml and pituitrin, also subcutaneously—in a dose of 1 ml. An ice bag is applied to the lower part of the abdomen. Camphor must not be administered during a hemorrhage because it elevates the blood pressure and therefore intensifies the hemorrhage.

If the hemorrhage continues, the *abdominal aorta is compressed* until the physician's arrival. The aorta is pressed against the spine with a fist (Fig. 175) until the hemorrhage completely ceases. Since in doing this the hand rapidly tires, it is recommended to change hands or have two people do it. To press the abdominal aorta to the spine a roll made of a towel or diaper may be used (Fig. 176). The roll is bandaged very tightly so that it presses the abdominal aorta fast against the spine (Fig. 177). By compression of the aorta the flow of blood to the uterus is considerably reduced and its muscles suffering a want of oxygen contract.

Hemorrhages from lacerations of the cervix uteri and the vagina. A postpartum hemorrhage may be caused by *laceration of the cervix uteri.* In these cases the uterus is usually well contracted and during attempts to massage it or press on it the hemorrhage increases to a stream (and sometimes

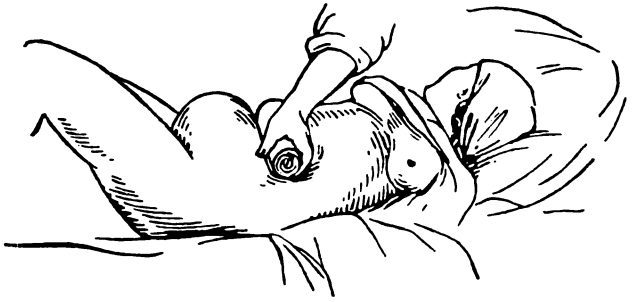


Fig. 176. Pressing the abdominal aorta with a roll

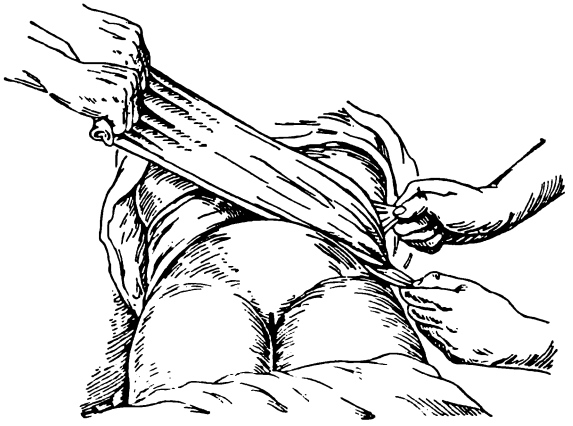


Fig. 177. Applying a tight bandage to the roll pressed against the aorta. A special bandage 15 cm wide or one made of dense material is used

several streams) of bright-red blood. This indicates that during hemorrhages from lacerations of the cervix uteri no uterine massage should be attempted because such manipulations only prevent the bleeding vessels from closing up. A physician or midwife must immediately be summoned. The abdominal aorta must be compressed until the physician's arrival. If the physician cannot arrive very soon, the midwife packs the vagina tightly, as shown on pages 259 and 260 and simultaneously bandages to the abdomen a roll which compresses the abdominal aorta.

Late postpartum hemorrhages. Sometimes the puerpera develops a hemorrhage a rather long time after parturition. Usually such a hemorrhage is preceded by prolonged serosanguineous discharges which sometimes develop into a more profuse hemorrhage. In a number of cases late postpartum hemorrhages are due to retention of pieces of placenta in the uterine cavity and require immediate aid. In these cases a physician or midwife must immediately be summoned.

Hemorrhages in Cases of Abortive Extrauterine Pregnancy

In cases of extrauterine pregnancy the fertilised ovum implants itself outside the uterus—in a tube, ovary or even abdominal cavity.

Developing in the tube the embryo distends its walls and thins them out, while at the site where the placenta begins to develop the wall of the tube is deeply permeated with villi and is finally ruptured. Rupture of the gravid tube is attended with an internal hemorrhage and syncope of the pregnant woman (shock). Internal hemorrhages are characterised by symptoms of acute anemia, considerable quickening and sharp weakening of the pulse. The temperature remains normal or sometimes drops below normal. The lower half of the abdomen is slightly distended and painful to touch (acute abdomen).

External hemorrhages in cases of discontinued tubal pregnancy are slight. The patient is immediately and very cautiously transported to a hospital where a requisite operation is performed and a blood transfusion is made.

Extrauterine (tubal) pregnancy may also be discontinued in other ways. In these cases the embryo is usually located closer to the ampulla of the tube; during separation of the embryo blood enters the abdominal cavity, this being attended with attacks of pain; the embryo may be gradually expressed into the abdominal cavity. This is a so-called tubal abortion. Usually it begins with attacks of pain in the lower part of the abdomen; the woman feels a pain on palpation, especially on the side of the gravid tube, owing to irritation of the peritoneum; this is attended with a dark sanguineous discharge from the genitalia.

The only method of treating extrauterine pregnancy is a laparotomy.

Measures Taken After Arresting the Hemorrhage

If the woman has lost a considerable amount of blood, it is not enough to arrest the hemorrhage, since the life of the exsanguinated woman with symptoms of acute anemia

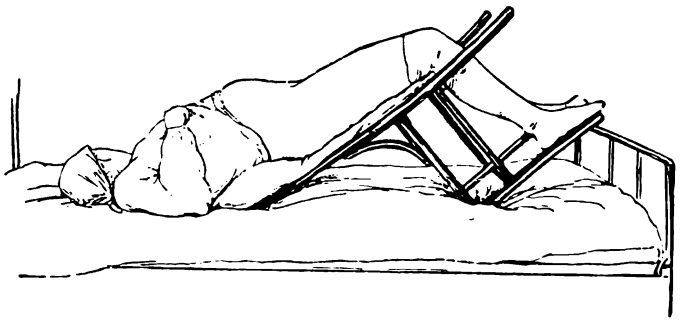


Fig. 178. Position with raised pelvis and lower limbs achieved with the aid of a chair. The woman must be warmly covered and surrounded with hot-water bottles

is still in danger. Such a patient must be placed in a warm bed and kept warm by hot-water bottles applied primarily to the legs and head. The hot-water bottles must be wrapped in towels so that the patient may not sustain any burns, since her skin has become less sensitive.

The woman is placed in a position with her legs raised, for which purpose pillows are put under her knees and hips, or the foot of the bed is raised, or, lastly, a chair is placed in bed, as shown in Fig. 178. With the woman in this position the blood flows to the upper half of the body, mainly to the brain, thus preventing anemia of the latter and facilitating the work of the heart.

One litre of warm physiologic saline solution and 300-500 ml of a 5 per cent glucose solution are administered subcutaneously. If no apparatus for infusing the physiologic saline solution (Bobrov's apparatus) is available, a rectal drip is recommended, in which case 500 ml of physiologic saline solution and 400-500 ml of a 5 per cent glucose solution are administered. No more than 50-60 drops per minute must be infused; this can be regulated with a clamp. Such an enema is quickly absorbed and can soon be repeated. In a hospital or maternity home a blood transfusion is in such cases obligatory.

The patient must be continuously given to drink warm tea or coffee in teaspoonfuls. Administration of too much liquid at one time must be avoided because it causes vomiting. To support cardiac activity after cessation of the hemorrhage, the patient is given cordiamine, caffeine and camphor.

After carrying out the foregoing measures the patient must be ensured thorough care and watched until complete recovery.

CHAPTER XII

PREPARATION OF THE PATIENT AND INSTRUMENTS FOR OBSTETRIC OPERATIONS

The nurse working in an obstetric hospital also assists the physician in cases of surgical intervention; she prepares the patients and instruments and directly helps the physician during operations.

PREPARATION OF THE PATIENT

Most obstetric operations, vaginal as well as abdominal, are urgent, and the patients cannot therefore always be thoroughly prepared for them in good time. However, where there is the least possibility to do so, it is necessary to cleanse the intestines with an enema, drain the urinary bladder by voluntary urination or, if need be, by means of a catheter, disinfect the external genitalia, internal surfaces of the thighs and the lower half of the abdomen; the external genitalia must be shaved as soon as the woman is admitted to the maternity home. If the operation is to be performed under general anesthesia, it is necessary to find out if the woman has artificial teeth and remove those which are removable.

At the same time it is necessary to prepare the operating table with all the requisite instruments and everything required for general or local anesthesia.

INSTRUMENTS FOR SUTURING PERINEAL LACERATIONS

Three degrees of perineal lacerations are distinguished: the *first degree*, in which the posterior vulvar commissure and perineal skin are lacerated; *second degree*, in which the muscles of the pelvic floor are ruptured, and *third degree*, in which the laceration also involves the anal sphincter. A perineal laceration must be sutured without fail, otherwise it threatens puerperal diseases and subsequently descent and prolapse of the vaginal walls and even the uterus.

The following instruments and materials are necessary for suturing perineal lacerations: two dressing forceps, one upper speculum, one lower speculum, two lateral speculums, one long forceps, two short surgical forceps, two anatomical forceps, six Péan's or Kocher's forceps, two needleholders, several needles of different sizes, curved scissors, straight scissors, one metal catheter, and suturing material—catgut for deep sutures and silk for skin sutures.

INSTRUMENTS FOR EXAMINING THE CERVIX UTERI AND FOR SUTURING ITS LACERATIONS

Suturing the lacerations of the cervix uteri is often an urgent operation, for which reason the maternity home always has the whole set of necessary instruments in a special steriliser ready for use.

This operation requires the following instruments: four vaginal speculums (lower, lever and two lateral), six bullet forceps, four dressing forceps, two long forceps, six Kocher's forceps, six Péan's forceps, two long needleholders, several sharply curved needles suitable for suturing in the interior, and suturing material—catgut. In addition to this one of the drums must have two long sterile tampons for packing the vagina.

INSTRUMENTS AND MATERIAL FOR PACKING THE UTERUS AND VAGINA

The uterus and vagina have to be packed in extreme cases, usually in order to arrest a hemorrhage before a radical operation.

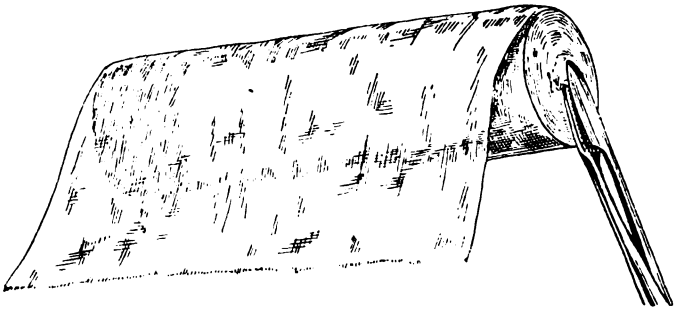


Fig. 179.
Plugging the uterus and vagina. Wide three-layer bandage is grasped with a dressing forceps so that by turning the dressing forceps in one direction the bandage is gradually unrolled

This intervention requires all the instruments used for suturing the lacerations of the cervix uteri, as well as long, curved dressing forceps and two sterile, wide (10-12 cm) three-layer gauze bandages at least 8-10 m long and with folded edges. It is best to keep such bandages pleated in a special small drum. In some cases the packing has to be performed manually (Figs. 179, 180, 181 and 182), inserting the aforementioned bandage layer by layer and tightly filling the uterine cavity and then the vagina.

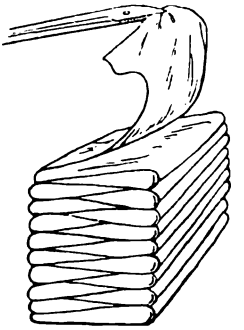


Fig. 180.
Plugging the vagina. The bandage used for packing is folded accordion-fashion

INSTRUMENTS FOR FORCEPS DELIVERY

Forceps have to be applied in cases in which it is necessary quickly to terminate the labour by extraction of the fetus (incipient fetal asphyxia, weak uterine contractions during prolonged labour, etc.). In such cases it is

necessary that all the factors for applying forceps should be on hand, i.e., complete dilatation of the external os uteri and low position of the head (in the pelvic cavity or outlet).

There are forceps of different types (Fig. 183), namely, outlet forceps which are applied when the head is already in the pelvic outlet, and high forceps applied when the fetal head is in the pelvic cavity.

In preparing the instruments the nurse must ask the physician what forceps he will need for the operation. Placing

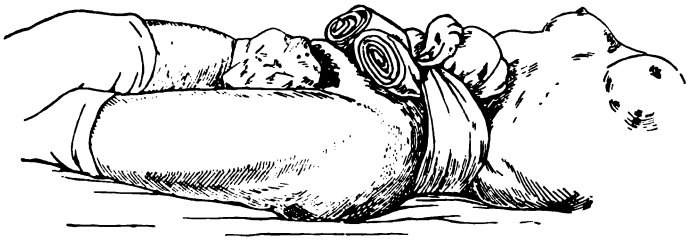


Fig. 181.
Plugging the vagina. After packing the vagina a pressure bandage is applied by means of a towel tied around the waist with a rolled sheet placed under the towel

the forceps in the steriliser the nurse must make sure that both blades (right and left) belong to the same forceps, for which purpose she must lock the blades before sterilisation. Together with the obstetric forceps the nurse boils two dressing forceps, two clamps for the umbilical cord, umbilical scissors and scissors for dissecting the perineum. The instruments required for examining and suturing the lacerations of the cervix uteri must be prepared at the same time.

INSTRUMENTS FOR CRANIOTOMY (PERFORATION OF THE FETAL HEAD AND CRANIOCLASIS)

This operation is usually performed on a dead and, in very rare cases, a live fetus (if spontaneous birth is impossible). During the operation the cranium is perforated and its contents are removed through the perforation.

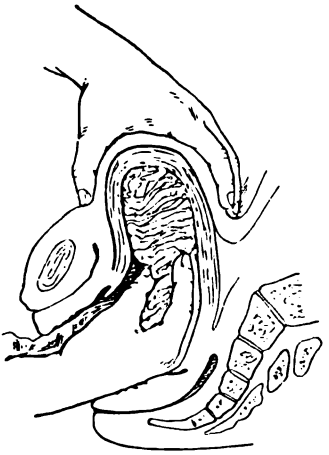
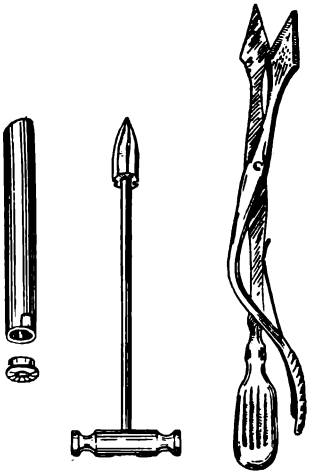


Fig. 182. Plugging the uterus by hand in cases of atonic hemorrhage after childbirth

Fig. 183. Obstetric forceps



Figs. 184, 185. Perforators. Fenomenov's—left, Blot's—right

For the perforation of the head a special *perforator* (Figs. 184 and 185) is used; through the perforation (Fig. 186) the brain is removed with a special *curet*. This is followed by a second operation—cranioclasis (crushing the head) by means of a *cranioclast* (Fig. 187) and removal of the fetus. Sometimes, in order to reduce the size of the shoulder girdle, a *cleidotomy* (section of the clavicles) is simulta-

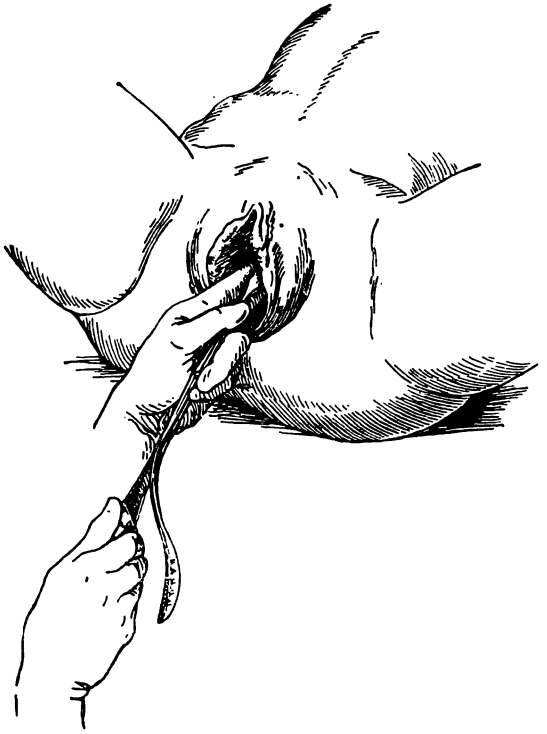


Fig. 186. Lancelike perforator is introduced into the cranium of the dead fetus

neously performed by means of special scissors or a special hook. It is more convenient to perform the perforation under control of vision, for which purpose it is necessary to have in readiness four sterilised (boiled) vaginal speculums—one upper, one lower and two lateral.

INSTRUMENTS FOR EMBRYOTOMY

An *embryotomy* is an operation of removing the fetus in parts, and must be resorted to, for example, in cases of advanced transverse presentation. In addition to the instruments used for perforation of the fetal head and cranioclasis, two more dressing forceps, two pincers, two clamps for the umbilical cord, a curved knife for decapitating the fetus and a decapitation hook (Fig. 188) are required.

Fig. 187. Cranioclast applied to perforated head of fetus

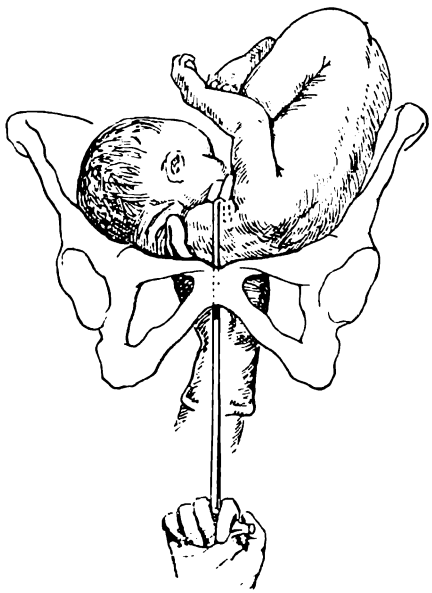


Fig. 188. Breaking the spine by a turn of Braun's decapitation hook

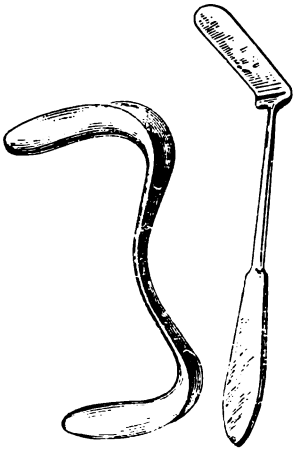


Fig. 189. Vaginal speculums a—grooved; b—flat, elevator

Fig. 190. Bullet forceps for grasping the lips of the cervix uteri

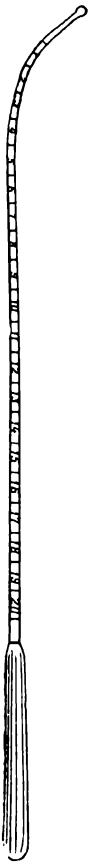


Fig. 193. Uterine probe graduated in centimetres

Fig. 191. Mjuso forceps (double-pronged)

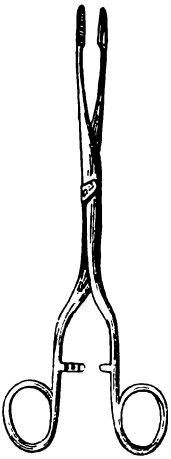


Fig. 192. Dressing forceps

INSTRUMENTS FOR UTERINE CURETTAGE

A curettage of the uterus if performed during the removal of the remains of the embryo, in cases of incomplete abortion or artificial termination of pregnancy. The following instruments are required for this operation: two vaginal speculums—upper and lower (Figs. 189 a and b), two bullet forceps (Fig. 190) or Mjuso forceps (Fig. 191), two dressing forceps (Fig. 192), a uterine probe (Fig. 193), a set of Hegar's dilators (No. 4-No. 12), depending on the stage of pregnancy (Fig. 194), curets of different sizes (Fig. 195), and a fenestrated abortion forceps.

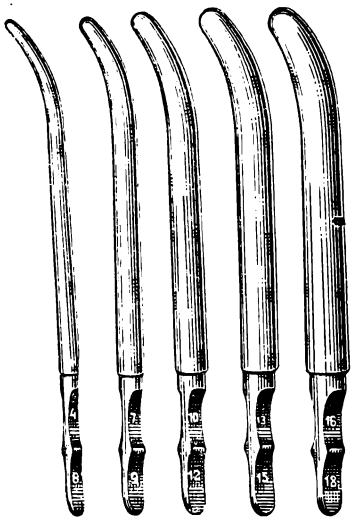


Fig. 194. Hegar's dilators

INSTRUMENTS FOR CESAREAN SECTION

A classical Cesarean section is an operation of delivering the fetus through an incision of the abdominal wall and the wall of the uterus. This operation requires the same instruments as does any gynecological laparotomy, which will be discussed on p. 307.

Vaginal Cesarean section. This operation is performed in cases of pregnancy of 12-14 and up to 26-28 weeks dura-

Fig. 195. Uterine curet

tion. It consists in separating the urinary bladder from the anterior wall of the cervix uteri and dissecting the up-

per lip of the cervix along its length beyond the internal os; this operation creates access to the uterus for the purpose of removing the fetus through the vagina. Through the opening thus made the fetus and placenta are removed. Following this the incision in the cervix uteri is sutured and the separated strip of the vagina and urinary bladder are stitched to their former place. This operation requires the same instruments as do the usual vaginal operations in gynecology (p. 307), for example, vaginal removal of the uterus, and the instruments necessary for perforation of the fetal head.

CHAPTER XIII

GYNECOLOGY

PRIMARY REGISTRATION, EXAMINATION AND METHODS OF EXAMINING GYNECOLOGICAL PATIENTS

Properly organised obstetric aid administered to all pregnant and parturient women is at the same time one of the main prophylactic factors in controlling women's diseases.

The measures of mother and child protection carried out in the Soviet Union—improvement of the living conditions, extensive housing construction, development of a wide network of city and collective farm maternity homes, as well as medical and obstetric stations—have sharply reduced the incidence of gynecological diseases.

In addition to the aforesaid factors, measures of women's labour protection and development of physical culture among women have also played an important part in preventing gynecological diseases. Of great importance for the control of gynecological diseases is early treatment of the patients and their timely detection by mass prophylactic examinations of the female population.

The functions of the woman's sexual sphere are most closely connected with her general condition. Thus, the extensive sanatory measures carried out in the U.S.S.R. help to reduce the disease incidence in general and that of gynecological diseases in particular.

Recording a Case History

The hospitals, maternity health centres and polyclinics record the case histories of all their gynecological patients. Approximately the same information is collected as is for recording the case history of childbirth; in addition, the women are questioned especially in reference to their particular diseases. A detailed and proper questioning of the patients considerably facilitates diagnosis, and in recording case histories the nurse must strive to get exact and detailed answers to all the questions.

Main Complaints

Uterine hemorrhages, leukorrhea and pains are the most frequent complaints; women not infrequently also complain of infertility.

The hemorrhages may be divided into two groups:

1) hemorrhages coinciding in time with menstruations and manifested in profuser bleeding with changes in the properties of the blood (hemorrhages with clots) or in longer menstruations than usual; such hemorrhages are called *menorrhagias*;

2) hemorrhages which do not coincide with menstruations in time, disorderly hemorrhages or hemorrhages recurring in women in whom the menses have already ceased; such hemorrhages are known as *metrorrhagias*.

In any complaints of hemorrhage it is first of all necessary to find out whether or not the woman is pregnant and only if pregnancy is excluded to look for the cause in some gynecological disease.

Complaints of hemorrhages of the nature of menorrhagias are not infrequently made by girls whose menses have but recently begun. Sometimes mothers pay no attention to these complaints, believing that the menses have not yet become established. As a matter of fact, in a number of cases the menses are at first irregular and only some time later assume a normal character. If the menses continue to be profuse, prolonged or painful, it is necessary to consult a gynecologist who will take the necessary measures.

In most cases such profuse menstruations subsequently become normal. However, so-called irrepressible uterine hemorrhages connected with irregular ovarian function are also observed—functional uterine hemorrhages which require treatment with hormones and sometimes surgical intervention.

Sometimes the blood discharged during the menses contains clots and the menses are attended with sharp pains. These pains are due to retention of menstrual blood in the uterus as a result of outflow difficulties, for example, in cases of sharp anteversion of the uterus or (what happens less frequently) retroversion, and of very narrow, so-called conical, elongated cervix uteri.

In such cases the blood is retained in the uterus, becomes coagulated, and clots are formed; these clots are expelled from the uterus during its contractions and that is why the pains assume a character of pangs. This condition is called *dysmenorrhea*. Dysmenorrhea usually disappears after the very first childbirth. The disease may also be due to other causes, for example, inflammation of the uterus and ovaries.

In some cases, on the contrary, very scant menses (*oligomenorrhea*) or temporary or constant absence of the menses (*amenorrhea*) are observed.

Uterine hemorrhages may be caused either by inflammatory diseases of the uterus, ovaries or surrounding cellular tissue, by neoplasms (tumours) of the genitalia, or improper ovarian function. In young women (20-35 years of age) the hemorrhages are usually due to inflammatory changes in the genitalia; in older women (36 years of age and older) the hemorrhages are most frequently caused by tumours.

In cases of inflammation of the genitalia the hemorrhages are for the most part of the nature of menorrhagia; very often rather profuse hemorrhages coincide with aggravation of the inflammatory process which is attended with pains in the lower part of the abdomen and the small of the back, and with a rise in temperature to 38-39°C.

Slight sanguineous discharges which are not connected with menstruation, hemorrhages following sexual intercourse and sanguineous discharges appearing in women in

whom the menses have already ceased (during the menopause) may be caused by so-called cervical *polyps* or tumours (benign or malignant).

Even slight hemorrhages must therefore be taken seriously. And yet doctor's assistants or nurses not infrequently, without carefully examining the patient, confine themselves in such cases to prescribing hemostatics, hot douching in the first place, and thus overlook malignant tumours. Before prescribing any hemostatic it is necessary to establish the real cause of the hemorrhages, *for which purpose each such patient must, as a rule, first be referred to a gynecologist.*

Leukorrhea is a vaginal discharge which soils the underwear. Sometimes the vaginal discharge increases in perfectly healthy women, for example, during pregnancy, before menstruation and at the time of sexual excitement. However, this discharge is always light-coloured, disappears quickly and does not in any way discomfort the women. Women much more frequently complain of profuse, yellowish-purulent, corrosive, dirty and fetid leukorrhea. Such leukorrhea is observed in gynecological patients. In these cases the discharges always contain an abundance of leukocytes and bacteria—third and fourth degrees of vaginal cleanliness (p. 50).

Leukorrhea always indicates morbid changes in the genitalia and is not infrequently one of the signs of a disease. Thus greenish-purulent, corrosive leukorrhea is most frequently observed during gonorrhea, and in inflammations caused by a parasite known as the *Trichomonas vaginalis* (see p.281); profuse, heavy, viscous (like mucus) leukorrhea is usually observed during inflammation of the cervical canal (*endocervicitis*), and thin leukorrhea of the nature of cream—in inflammations of the uterine cavity (*endometritis*); dirty, decomposing, fetid brownish leukorrhea, especially in elderly patients, warrant the assumption of cancer.

Of course, the disease cannot be precisely diagnosed by the nature of the leukorrhea. The character of leukorrhea makes it possible only to assume a certain disease which can be confirmed by a careful examination of the patient and the data furnished by laboratory analyses.

Pains are a symptom of almost all gynecological diseases. However, not all diseases are attended with the same pain sensations. For example, *labourlike* pains are characteristic of abortion and clots of blood retained in the uterine cavity; *continuous dull* pains are caused by prolonged pressure on nerve fibres, for example, in cases of inflammatory edema and large fibromyomas; persistent pains in the *sacrum* are observed in cases of a fixed retroversion of the uterus; pains of a *gnawing* character which sometimes also continue at night and exhaust the patient, occur in cases of neglected malignant neoplasms, etc. The character of the disease may be assumed after a careful questioning of the patient and consideration of all the extant signs and the woman's condition and age. Not one of these signs considered by itself, as also no absence of any of them, warrants any categorical conclusions. The patient must be thoroughly examined by a gynecologist.

For **infertility** see p. 290.

Preparation of the Patient for a Gynecological Examination

To avoid errors during the examination, as well as to facilitate the latter, it is necessary to prepare the woman beforehand. Before the examination the woman must, first of all, urinate, and, if she has had no stool, the intestines must be cleansed with an enema. In cases in which the woman cannot urinate voluntarily, the urinary bladder is catheterised by prescription of a physician with all rules of asepsis and antisepsis observed. If the external genitalia are soiled or covered with bloody crusts, the nurse must wash them before the examination (only by permission of the physician). The patient is examined in a special gynecological chair.

Techniques of Bimanual Examination and Examination with Speculums

The examinations are made with disinfected hands, preferably gloved. The *external genitalia* are examined first, to determine their condition and degree of development;

this is followed by examination of the hairy parts (if pubic lice are discovered, the hair on the external genitalia is shaved and the latter are thoroughly washed with a mercury bichloride solution or a sabadilla tincture). To examine the urethral opening and vaginal entrance, the labia are parted with the fingers of the left hand (see Fig. 54) and the external urethral opening is carefully examined, special attention being paid to the colour of its mucosa and the presence or absence of redness in the openings of the glands in the canal (red points on the sides of the canal). The openings of the ducts of Bartholin's glands are examined and, if the latter are infected, red points are observed at these sites. The perineum is examined, to ascertain if any lacerations were sustained during former childbirth, and the anus—to see if the patient has hemorrhoids, condylomas and pinworms (*Enterobius vermicularis*).

This is followed by a **vaginal**, so-called **bimanual** examination. One or two fingers (the index and middle fingers) of the right hand are introduced into the vagina and the palm of the left hand is placed on the abdomen above the mons Veneris, thus determining the condition of the vaginal walls, depth of the fornices, presence or absence of protrusions in them, shape, size and condition of the cervix uteri (conical, cylindrical, lacerations, smooth or rough surface), position, shape and size of the uterus.

Normally the *uterus* is in the middle of the minor pelvis and its body forms an obtuse angle with the cervix, the angle being opened anteriorly; this position is called *anteflexion*, while the tilting of the uterus posteriorly is known as *retroflexion*.

After this the condition of the *uterine tubes*, *ovaries* (painful, thickened, enlarged) and *perimetric spaces* (presence of infiltrates in the perimetric connective tissue and tumours in the minor pelvis) is determined.

In addition to the manual vaginal examination, the vagina must also be examined with the aid of special speculums. By introducing speculums into the vagina it is possible to see the vaginal mucosa and the vaginal part of the uterus and thus to discover inflammatory changes in the vaginal mucosa, ulcers, polyps, erosions on the cervix uteri, and other changes.

The following speculums are used in gynecological practice:

Cusco's speculum—a bivalve speculum (Fig. 196). Cusco's speculums (or Cusco-type speculums) may have continuous or latticed blades.

Sims's speculum—a bivalve speculum on one handle (Fig. 197); one end of the speculum is somewhat shorter than the other.

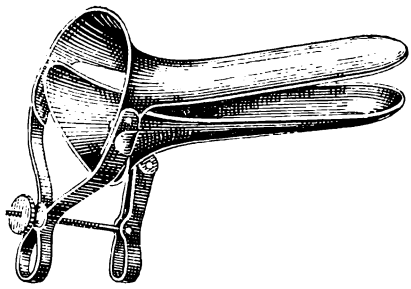


Fig. 196. Cusco's bivalve vaginal speculum

Fig. 197. Introduction of Sims's speculum into the vagina

Doyen's speculum—a single blade speculum without a removable handle (Fig. 198).

The foregoing speculums are at first introduced into the vagina edgewise and are then turned transversely in the interior; to remove the speculums from the vagina these movements are performed in the reverse order. Such introduction and withdrawal of the speculums are painless.

In addition to the aforementioned speculums a so-called tubular speculum made of frosted glass (Fig. 199) and a luminescent speculum are used.

To examine the length of the uterine cavity and, sometimes, to discover protrusions or proliferations on its walls,

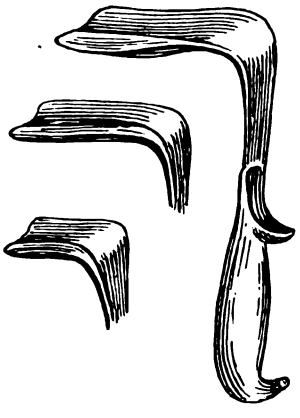


Fig. 198.
Doyen's speculum

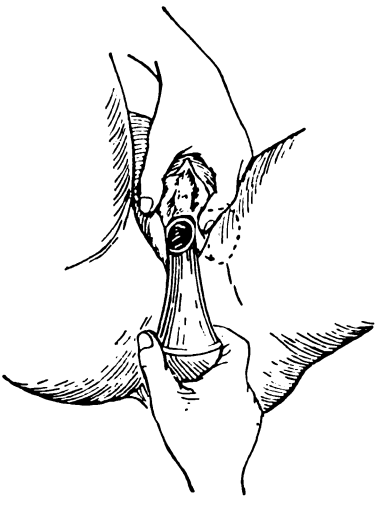


Fig. 199.
Introduction of a tubular speculum into the vagina. This speculum is used for vaginal irrigation in the treatment of erosions of the cervix uteri

a graduated *uterine probe* (see Fig. 193) is used. All instruments must be sterilised by boiling before use.

Gynecological practice sometimes requires examination of the urinary bladder and rectum. A special instrument—

cystoscope — is used to examine the urinary bladder, and a rectal speculum or special *rectoscope* is employed to examine the rectum.

While preparing the aforesaid instruments, the nurse must see to it that there are also enough sterilised dressing and other forceps, and in the drums—sterile gauze napkins and small sterile cotton balls.

Microscopic examination of the discharge from different parts of the genital tract is very valuable. For this examination smears are usually taken on slides; for the technique of taking smears see p. 337.

Diagnostic Curettage of the Uterine Mucosa

This method is used in cases in which it is necessary to obtain some uterine mucosa for microscopic examination or to ascertain if there are any embryonic remains in the uterine cavity.

The same instruments are prepared for diagnostic curettage as are for usual curettage (p. 265). The material obtained by curettage is collected on a clean gauze napkin placed on the lower speculum, or in a special dish. Then the material is put in a jar containing alcohol or a 3-4 per cent formalin solution, the jar is labelled, the number of the case history, name and age of the patient, date of expected menstruation, tentative diagnosis and date of the curettage being indicated on the label. The material is sent to a histological laboratory for examination.

Biopsy

Sometimes, especially in cases in which cancer is suspected, the physician cuts a piece of tissue out of the suspicious place on the cervix uteri (erosion) for microscopic examination. This operation is called a *biopsy*.

A biopsy requires two Sims's speculums, two bullet forceps, two dressing forceps, two long surgical forceps, a small sharp curet, in case a curettage of the cervical canal may be needed, scissors and a scalpel; these instruments

must be kept in alcohol for at least 15 minutes before use. A biopsy also requires a special instrument—*conchotome*—by means of which the piece of tissue is cut out. The physician must have ready to hand a drum with sterile gauze and cotton and one or two sterile bandages 8-10 cm wide in case a tamponade may be needed. It is also necessary to have in readiness a needleholder, needles and suturing material (catgut) because suturing may be required after a biopsy.

The piece of tissue cut out of the suspicious part of the cervix and the adjacent part of the apparently healthy tissue is placed in a sterile gauze napkin and is thus immediately sent to a laboratory for microscopic examination with a note indicating the patient's name, age, number of case history, time of the biopsy, site where the piece was taken, and the tentative diagnosis. If the laboratory is far away or, for example, the biopsy is made in the countryside and the laboratory is in town, the obtained piece must be immediately placed in a glass jar filled with alcohol or a 10 per cent formalin solution and plugged with a ground-in stopper, the jar being labelled, the label containing all the foregoing data.

After the biopsy the edges of the wound are painted with iodine. If the biopsy was made on an outpatient, the latter must stay in bed for at least two hours, after which, if she has no hemorrhage, she may be allowed to go home. The patient must be warned to move about less during the first two days after the biopsy and to abstain from sexual intercourse for two weeks in order to avoid hemorrhages. It is best to perform a biopsy in a hospital where the patient is retained for one or two days.

The additional and special methods of examination sometimes used in gynecological practice will be discussed below.

CHAPTER XIV

DISEASES OF THE FEMALE GENITALIA

DEVELOPMENTAL DEFECTS OF THE GENITALIA

Underdeveloped uterus and vagina. Some adult women have a small uterus and a narrow vagina, like those of a small girl (*infantile uterus*), or a very small uterus with an elongated cervix (*hypoplasia of the uterus*). Underdeveloped external genitalia are also observed, namely, inadequately developed labia majora and minora, low perineum, narrow and small vulvar opening, scanty hair on the mons Veneris, and feebly pronounced secondary sexual characteristics. In such women underdevelopment of other systems of the organism is also not infrequently observed.

In cases of underdeveloped internal genitalia disorders of the ovarian-menstrual cycle are observed (late onset of menstruations, scant menses to the point of amenorrhea, infertility). These disorders can be prevented by sanatory measures carried out during the first years of the girl's life (p.64).

IRREGULAR POSITION OF THE GENITALIA

An irregular position of the genitalia implies a permanent deviation of the uterus from its usual position; in this case the woman has rather unpleasant sensations and sometimes pains.

The irregular position of the uterus—*retroversion*, *lateroflexion*—is in the enormous majority of cases a result

of inflammatory diseases of the internal genitalia. The adhesions and cicatricial wrinkles formed after inflammation also alter the position of the uterus. The uterus is similarly in an irregular position when its ligamentous apparatus is weak and when the integrity of the muscles of the pelvic floor has been violated as a result of an unsutured perineal laceration.

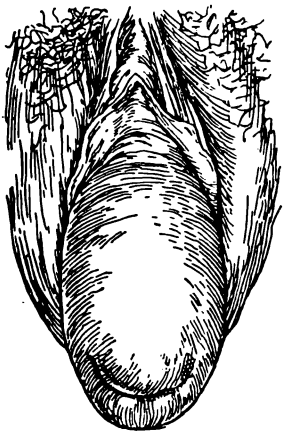


Fig. 200. Total prolapse of the uterus

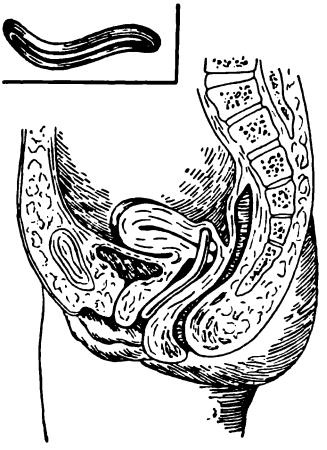


Fig. 201. Uterus kept in place by pessary

Descent and prolapse of the genitalia are particularly clearly observed during gynecological examination if the woman is asked to strain. In cases of descent of the vaginal walls the latter seem to become everted from the vulvar opening, while in cases of uterine prolapse the uterus emerges from the vaginal entrance to the exterior when the woman strains.

In cases of protrusion of the anterior vaginal wall a protrusion of the posterior wall of the urinary bladder—*cystocele*—is simultaneously observed, while in cases of protrusion of the posterior vaginal wall the wall of the rectum underlying it also simultaneously protrudes—*rectocele*. A prolapsed uterus with its cervix emerged to the exterior sometimes remains in this position (Fig. 200) and interferes

with walking; the skin of the thighs is irritated and ulcerated. In such cases the cervix uteri is edematous and enlarged; disturbances of cervical epithelium, purulent ulcers in these parts, a sharp reddening and maceration of the skin of the thighs are observed. If the prolapsed uterus remains in this position for a long time, a slight edema of the cervix uteri may lead to strangulation of the uterus.

The most frequent causes of descent and prolapse of the vaginal walls and the uterus are, as was already mentioned, lacerations of the perineum and the pelvic floor, which were not sutured in due time.

Properly organised obstetric aid therefore forms the basis for preventing the aforesaid pathology.

The *treatment in cases of irregular positions of the uterus* depends on the peculiarities of each individual case. In cases of uterine prolapse various rings supporting the uterus in a normal position are inserted in the vagina (Fig. 201). It should be noted that the use of such rings presents a number of inconveniences; the rings may not be left in the vagina for long periods of time because they irritate the vaginal wall mechanically, cause profuse leukorrhea and may result in formation of a *decubitus ulcer*, for which reason they must be frequently removed and reinserted. Moreover, the rings do not lead to recovery and may serve only as a temporary palliative. An operation is the only radical treatment of uterine prolapse.

If the irregular position of the uterus continues greatly to discomfort the woman despite the treatment, in some cases surgical treatment is also indicated.

INFLAMMATORY DISEASES OF THE GENITALIA

Inflammation of the genitalia is the most frequent of all gynecological diseases. The inflammatory diseases are caused by introduction of infection, i.e., pathogenic microbes, into the female genitalia.

Microbes may gain entrance into the genitalia in various ways and may cause inflammatory processes in any part of the genitalia—the external genitalia, vagina, uterus, tubes, ovaries and surrounding tissues.

Pathogenic microorganisms may penetrate into the female genitalia during sexual intercourse and during negligent vaginal examination conducted without observance of the rules of asepsis and antisepsis.

Very frequently microorganisms are introduced or those which are already in the vagina are moved higher during an abortion, especially if the latter is produced outside of a hospital. Sometimes microorganisms enter the higher parts of the genitalia from the vagina during labour and the puerperium, as well as during the menses.

It should be noted that the microorganisms contained in the vagina do not always produce disease because the healthy vaginal epithelium and the normal vaginal weakly-acid environment serve as a good barrier (defence) against many bacteria; however, if the bacteria gain entrance into the uterine cavity or the tubes just the same, they frequently cause inflammatory diseases therein.

Infection may penetrate into the genitalia from the adjacent organs, for example, from the rectum, urinary bladder, vermiform appendix, etc. Bacteria may also be brought into the genitalia from distant organs by the blood or lymph, for example, from the lungs in cases of tuberculosis (by metastasis).

In cases of inflammatory diseases several parts of the genitalia are not infrequently affected simultaneously, and in acute cases, if the infection gains entrance into the tubes and farther into the peritoneal cavity, inflammation of the peritoneum sometimes develops and may lead to general peritonitis.

Vulvitis

Vulvitis is an inflammation of the external genitalia and the vaginal entrance; it is characterised by redness and edema of the labia majora and minora, burning, itching and sharp painfulness to touch.

The inflammation may be caused by introduction of microbes from without in cases of untidy genitalia and violation of the epithelial integrity, or from the internal organs together with the outflowing discharges. It is therefore clear that treatment must aim at eliminating the causes of this disease.

Bartholinitis

Bartholinitis is an inflammation of Bartholin's glands. Usually only part of the gland is affected. The most frequent cause of bartholinitis is penetration of gonococci into the gland; the inflammation is less frequently caused by other microbes. Redness of the opening of the gland's duct, redness of the integuments of the labium majus in the corresponding part, swelling and painfulness are characteristic of inflammation of this gland.

During the acute period the treatment consists in rest, application of ice, administration of antibiotics and sulfa drugs, and, later, application of heat. In some cases surgical intervention subsequently has to be resorted to.

Colpitis or Vaginitis

Colpitis or vaginitis is an inflammation of the vagina; in this disease the vaginal mucosa is red, edematous, sometimes appearing shagreen (so-called granular colpitis) and at times bleeds when touched; it involves a discharge, most frequently of a purulent nature. During the acute stage patients complain of a burning sensation, corrosion of the skin on the thighs by the outflowing discharges, pain during urination, coitus and examination.

Whatever the source of infection, the integrity of the vaginal epithelium is often violated. This may take place during childbirth, prolonged inflammation of the internal genitalia, in which the discharge destroys the vaginal epithelium, very passionate coitus, etc. During the acute stage this disease requires rest; later, when the acute symptoms have subsided, suitable treatment is begun (careful disinfection of the vagina and external genitalia). It should be noted that colpitis is not infrequently observed in little girls as well as in old women (*senile colpitis*).

Trichomoniasis Vaginalis

Trichomoniasis vaginalis develops when the vagina is infested by a parasite known as the *Trichomonas*. This disease occurs rather frequently and is characterised by pro-

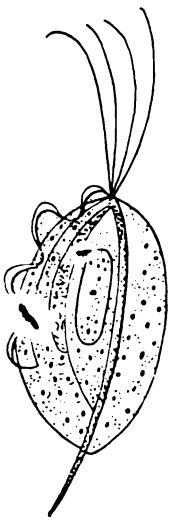


Fig. 202. Trichomonas vaginalis

fuse foamy greenish discharges which cause the external genitalia and vagina to itch.

The disease is diagnosed on discovery of Trichomonas (Fig. 202) by a microscopic examination of a drop of the discharge taken from the vagina (p. 338).

Infestation with Trichomonas is possible both sexually and asexually. Medical workers must devote particular attention to prophylaxis of trichomoniasis. Work in maternity health centres requires strict observance of the rules of asepsis and antisepsis to prevent healthy women from becoming infested. No common sponge must be used and no sleeping in one bed with the woman suffering from trichomoniasis must be allowed.

Every woman ought to know that she may become infested with Trichomonas through contact of her genitalia with dirty water (bathing in standing water, etc.).

In the maternity health centre trichomoniasis is diagnosed in patients who come there for consultation. However, diagnosis of the disease alone is not enough; it is necessary to find the sources of infestation and decontaminate them.

Women are often infested with Trichomonas during sexual intercourse, the male urethra containing Trichomonas; it is therefore necessary simultaneously to treat the husband. If trichomoniasis is discovered in a pregnant woman, it must be reported to the maternity home so that the latter may take requisite measures to prevent infestation of the newborn girl.

The personnel of the department for the newborn in maternity homes, of crèches and kindergartens must be regularly examined in order that trichomoniasis may be discovered and treated in due time.

If trichomoniasis is discovered in little girls, it is necessary to examine the members of their families.

Broad sections of the population must be informed of the ways infestation with Trichomonas takes place. In the

control of trichomoniasis personal hygiene assumes particular importance.

Colpitis may be caused by penetration of *Enterobius vermicularis* (an intestinal parasite) and is most frequently observed in little girls. *Enterobius* females often crawl out of the rectum and lay their eggs near the anus whence the *Enterobius* may reach the external genitalia, then gain entrance into the vagina and farther into the uterus and tubes. These parasites cause an irritation of the skin of the external genitalia and itching in the vagina. The disease is diagnosed by discovery of these parasites or their eggs in the vagina.

Endocervicitis

Endocervicitis is an inflammation of the mucosa of the cervical canal. Usually the patients complain of considerable leukorrhea. Lacerations of the cervix uteri, unsutured after childbirth, eversions of the cervix, its ruptures during abortions, and the appearance of polyps from the interior of the cervical canal are factors favouring the development of this disease.

Inflammation of the mucosa of the cervical canal with constant discharges leads to formation of ulcers in the region of the external os—so-called *erosion*. Sometimes small blisterlike structures obstructing the glands of the mucosa are observed on an isolated part of the cervical os; these are *Nabothian cysts or ovules* (*ovula Nabothii*).

Inflammation of the Uterine Mucosa—Endometritis—and of the Uterine Walls—Metritis

This disease results from penetration of infection into the uterine cavity and thence to the uterine walls. During the acute stage the inflammation is not infrequently attended with pyrexia, hemorrhages and, subsequently, sanguineous discharges. Examination shows the uterus to be somewhat enlarged (edematous) and painful. During this stage the patient requires rest, application of ice to the abdomen,

antibiotics and sulfa drugs, and, subsequently, suitable anti-inflammatory measures, depending on the course of the disease.

Inflammation of the Uterine Appendages—Adnexitis

Inflammation of the uterine appendages, i.e., the uterine tubes and the ovaries, is usually attended, during the acute stage, with sharp pains, pyrexia and sometimes hemorrhages. The patient must be confined to bed. During this stage the patient requires rest, antibiotics, sulfa drugs, analgesics (suppositories) and application of cold to the lower part of the abdomen. After abatement of the acute symptoms suitable anti-inflammatory treatment—applications of heat (p. 316)—is administered.

Parametritis

Parametritis—inflammation of the parametric connective tissue—is most frequently a result of penetration of microbes through the cervix uteri in cases of deep ruptures of the latter. This disease begins with sharp pains in the lower part of the abdomen, urinary difficulties, abdominal distention and fever (39°C and higher) in the evenings and a considerable drop in temperature in the mornings. If the process progresses, the usual edema may develop suppuration; the accumulated pus separates the peritoneal layers of the broad ligaments of the uterus, spreads upward and emerges from the cavity of the minor pelvis; during examination the pus can be palpated through the abdominal integuments in the right or left iliac regions.

During the acute stage of parametritis the patient needs rest, antibiotics, sulfa drugs, analgesics and cold at the site of pain. Subsequently, when the temperature has become more or less regular, thermal treatment is begun (hot-water bottles, hot compresses and other applications of heat). Usually this treatment gradually eliminates parametritis. However, if suppuration has taken place, it

is sometimes necessary to resort to surgical intervention, i.e., an incision through the vagina or through the abdominal wall in order to provide an outlet for the accumulated pus.

Inflammation of the Pelvic Peritoneum

Penetration of infection into the pelvic peritoneum gives rise to pelvic peritonitis. This disease begins with sharp pains in the lower part of the abdomen and abdominal distention, the abdomen being so painful that it cannot be touched (the lower part of the abdomen does not participate in respiration) and fever; the tongue is coated and the patient not infrequently vomits. During this stage the patient requires complete rest, sulfa drugs, antibiotics and analgesics (p. 335); an ice bag is applied to the abdomen so that it barely touches the abdominal wall. As a result of the inflammation of the pelvic peritoneum, adhesions are subsequently formed between the uterus, tubes, ovaries and intestines, and not infrequently the omentum—so-called *parametric* adhesions.

Gonorrhea

Before the appearance of antibiotics gonorrhea was one of the most frequent and severe inflammatory diseases of the female genitalia.

Usually gonococci gain entrance into the female genitalia during coitus with an infected male. Gonorrhea may affect either the entire female urogenital apparatus or only some part of it; the genitalia are most frequently affected successively one after another. As for the frequency of affection, the various parts are involved in the following order: urethra, cervix uteri, uterine mucosa, tubes, Bartholin's glands and vagina.

A woman may also become infected with gonorrhea *asexually*, for example, by washing her genitalia from a basin used by a gonorrhea patient or by using the same sponge or towel as a gonorrhea patient.

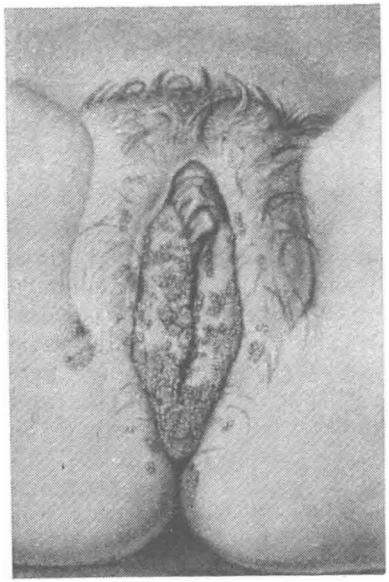


Fig. 203.
Condyloma acuminatum (pointed)

In a number of cases the mothers affected with gonorrhea infect the little girls by sleeping in the same bed with them and by washing their genitalia with sponges contaminated with gonorrheal discharges. Little girls may become similarly infected in crèches and kindergartens if there are gonorrhea patients among the attending personnel (nurses, attendants).

During and after menstruations, the puerperium and abortions gonorrheal infection usually extends to the higher parts of the sexual apparatus. An average of 3-8 days elapses from the moment gonococci have gained entrance into the female genitalia to the appearance of symptoms of the disease. Frequent urges to urinate, burning and sharp pain during urination, itching and redness of the external genitalia, early appearance of yellow puruloid leukorrhea which corrodes the skin of the thighs constitute the characteristic signs of acute gonorrhea of the lower parts of the genitalia. Later all these symptoms abate and only yellow puruloid leukorrhea, which corrodes the skin of the thighs, remains.

Examination reveals a redness of the mucosa of the vaginal entrance and sharp painfulness to touch. Gonococci are discovered in the discharges examined microscopically. Sometimes easily bleeding proliferations—*pointed condylomas* or *condyloma acuminatum* (Fig. 203)—are formed on the skin of the external genitalia. The pointed condylomas are skin outgrowths on a thin pedicle and look like cock's combs. Wide condylomas occurring in syphilis have a broad base and are somewhat flattened and moist. The smears

taken from wide condylomas are often found to contain the *Treponema pallidum* (the causative agent of syphilis).

Gaining entrance into the interior of Bartholin's glands gonococci frequently cause their inflammation; owing to the obstruction of the glands' ducts the discharge accumulates in them and sometimes forms abscesses.

Penetrating into the cervix uteri gonococci cause *gonorrheal endocervicitis* which is characterised by purulent discharges from the cervix and formation of ulcers on the surface of the external os uteri (erosion). From the cervix uteri gonococci often spread to the uterine cavity and farther to the uterine tubes, affecting their mucous membrane. Not infrequently gonococci penetrate through the tubes into the abdominal cavity and produce inflammation of the pelvic peritoneum, and sometimes, very rarely, to be sure, also general gonococcal peritonitis—inflammation of the peritoneum.

Unlike other infections, a bilateral affection is a characteristic sign of ascending gonorrhea; during gonorrhea *bilateral salpingitis* or *salpingo-oophoritis* (simultaneous inflammation of a tube and ovary) is observed.

Women, who had ascending gonorrhea, very frequently suffer from infertility as a result of adhesive inflammation of the lumen of the uterine tubes.

Gonococci may very long remain in the genitalia; the sites in the external genitalia where the gonococci are retained for a long time are the glandular ducts at the external opening of the urethra and Bartholin's glands. During examination of women attention is always devoted to these sites which in the presence of gonorrheal inflammation appear as red spots (*macula gonorrhoica*).

Remaining in the genitalia gonococci retain very long their viability, especially if they have gained entrance into cavities inaccessible to therapeutic influence. This viability of gonococci is also supported by the fact that menstruations attended with a plentiful flow of blood to the genitalia favour frequent aggravations of the gonococcal inflammation.

The most important thing in cases of acute gonorrhea is to give the woman a long rest. Sexual intercourse and walking about favour the spread of the infection upward.

During the acute stage the patient requires quiet, analgesics (suppositories) and application of cold to the lower part of the abdomen; various therapeutic procedures are employed after the process has abated. In chronic gonorrhea the usual anti-inflammatory methods of treatment are employed.

A woman affected with gonorrhea must very carefully safeguard her child against infection; she must see to it that no gonorrheal discharges come in contact with the child's genitalia. Prophylaxis of gonorrhea in children's institutions consists in systematic examinations of the attending personnel and the children followed by immediate isolation of those affected with the disease.

Great results have been achieved in the control of gonorrhea in the Soviet Union. The hygienic and cultural standards of the population have considerably improved. A wide network of venereological dispensaries which conduct extensive sanitary, prophylactic and therapeutic work has been set up. Emergency antivenereal aid stations have been opened; these stations work 24 hours a day and persons applying there immediately after suspicious coitus are administered a lavage of the genital canal.

Gonorrhea is most effectively treated with penicillin and sulfa drugs (streptocide, sulfidine, sulfazole). Treatment must begin as soon as possible after the infection. In addition to antibiotics and sulfa drugs local influences are exerted on the inflammatory focus.

Treatment of gonorrhea is conducted under control of bacteriological and bacterioscopic examinations. The patient may be considered cured if after the disappearance of all clinical symptoms careful examination (with provocations) fails to discover any gonococci for a period of at least three menstrual cycles.

Syphilis

Syphilis of the female genitalia is characterised by an appearance of a syphilitic ulcer—*hard chancre*—on the external genitalia, in the vagina or on the cervix uteri. The external genitalia, especially, the so-called navicu-

lar fossa, are often the sites of the primary development of this ulcer. A hard chancre not infrequently occurs on the lip of the cervix uteri. A hard chancre is a rounded ulcer with a deep floor covered with a greyish purulent film; the edges of the ulcer are even and bright-red. Syphilis requires specific treatment.

Septic Diseases

Above (p. 192) we discussed septic diseases during the puerperium. Penetration of microbes into the genitalia may also cause septic inflammatory diseases outside of pregnancy. Septic infection is often introduced during intrauterine manipulations—swabbing, injections and abortions performed outside of hospitals; if the integrity of vaginal tissue is violated, infection may also gain entrance through these gates. Unlike the widespread process during gonorrheal infection which in most cases affects the entire sexual apparatus, septic inflammation of the internal genitalia is most frequently confined to individual parts. If septic infection penetrates to the higher parts of the genitalia, usually one side is affected and either a right-sided or left-sided affection of the *adnexa* and parametric connective tissue is observed.

As regards a direct hazard to the patient's life, septic infection is more dangerous than gonococcic infection; however, during their subsequent course septic diseases are more amenable to treatment and the microorganisms are relatively rapidly destroyed. Most women who have recovered from such diseases retain their child-bearing ability. To be sure, in these cases considerable anatomical changes —adhesions, cicatricial wrinkling—may also remain in the parts which were affected by septic inflammation.

Tuberculosis

Tuberculosis of the female internal genitalia is most frequently a secondary disease resulting from penetration of tubercle bacilli with the blood stream from the primary

focus, usually from the lungs. However, primary tuberculosis of the internal genitalia (uterine cavity and tubes) is also observed. The patients usually complain of primary infertility and sometimes disturbances of the menstrual cycle to the point of amenorrhea. It is very difficult to diagnose tuberculosis of the internal genitalia, although it is possible to diagnose the disease by a special method of obtaining discharges from the uterus and their microscopic examination combined with a careful investigation of the past history of the case. Treatment of tuberculosis of the female genitalia has become more effective since streptomycin and other agents began to be administered to such patients.

Other Diseases

There are also other inflammatory diseases of the female genitalia, for example, *diphtheria*. Development of inflammatory diseases of the female genitalia may also be influenced by general acute diseases, for example, acute infections (*scarlet fever*, *measles*, etc.), especially, during childhood; these diseases sometimes leave various changes in the genitalia, for example, adhesion of the vaginal walls and constriction of the vaginal lumen.

INFERTILITY, ITS PREVENTION AND TREATMENT

Two forms of infertility are distinguished: *primary*, if the woman has never been pregnant since the beginning of her sexual life (tuberculosis, hypoplasia of the uterus, other developmental anomalies), and *secondary*, if the woman was pregnant or bore children and then became infertile (after an abortion, especially during the first pregnancy, after inflammation of the internal genitalia).

There are various reasons for female infertility. It should be remembered that infertility may also depend on the husband. For example, the husband, if he had gonorrhea aggravated by inflammation of the *epididymis* (*epididymitis*) may have *azoospermia* (absence of spermatozoa in

the semen). Before instituting treatment of a woman for infertility it is therefore necessary first to examine the husband and exclude pathology on his part. The sperm is obtained during sexual intercourse with a preservative which together with the sperm is immediately placed in a clean warm glass; the glass is kept warm by a hot-water bag or is put in a thermos bottle and urgently delivered to the nearest laboratory.

Female infertility is often a result of inflammation of the internal genitalia, caused mainly by complications following abortions and gonorrhea. Penetrating into the tubal canal the infection causes an adhesive inflammation which results in obstruction of the uterine tubes. To ascertain this, the method of perflation or roentgenography of the tubes after filling the uterine cavity and the tubes with a contrast substance (*hysterosalpingography*) is used.

Infertility may also be the result of underdevelopment of the uterus and tubes.

Prophylaxis of gonorrhea in females, early and proper treatment of gonorrhea, control of abortions, timely treatment of inflammatory diseases of the internal genitalia and proper education of the girl, which ensures her normal physical development, prevent female infertility.

Treatment of female infertility involves considerable difficulties. The method used (*hormonal therapy, physiobalneotherapy*) depends on the established cause of infertility. In most cases treatment of an inflammation of the internal genitalia and of its residual symptoms is simultaneously treatment of infertility.

TRAUMAS OF THE GENITALIA

These include the most frequently occurring *lacerations of the perineum, lacerations of the cervix uteri and fistulas.*

If the puerperium runs a favourable course, the lacerations of the perineum unsutured after childbirth at first hardly give the women any discomfort. Subsequently, however, such lacerations lead, as we have already mentioned, to descent of the vaginal walls, for which reason it is necessary to suture the lacerations of the perineum after childbirth.

Not infrequently the cervix uteri is also lacerated during labour; these lacerations do not always produce postpartum hemorrhages and therefore remain undiscovered, and, as a result, are not sutured in due time. Subsequently, the cervical canal remains open at the site of the laceration and becomes infected with bacteria from the vagina; inflammation of the mucous membrane of the cervical canal develops and is attended with profuse, sometimes exhausting, discharges—leukorrhea. In cases of such lacerations the cervix has to be sutured; some cases, however, require surgical excision of part of the cervix—amputation of the cervix uteri.

To prevent such complications, the cervix uteri of every woman is examined in the maternity home immediately after childbirth, regardless of whether there are any hemorrhages, and the lacerations thus discovered are sutured.

FISTULAS

Fistulas of the urinary bladder and rectum constitute an extraordinary grave complication. The greatest number of fistulas in young women is a result of improper management of labour or, to be exact, absence of requisite obstetric aid. Prolonged labour with the fetal head too long located in the pelvic inlet and disparity in the measurements of the head and pelvis (contracted pelvis) may lead to mortification of the surrounding tissue and organs of the minor pelvis. The urinary bladder is usually the first to be affected —a *vesicovaginal* fistula is formed; the rectum is not infrequently also affected, in which cases a *fecal fistula* is formed.

Prolonged pressure of the urinary bladder to the pelvic walls during labour at first leads to urinary retention. If the person managing the labour pays no attention to this, continued compression of the urinary bladder results in the appearance of blood in the urine.

Fistulas are not infrequently observed in cases of neglected malignant neoplasms, in which the tumours grow through the wall of the urinary bladder or rectum.

The main symptom of a urinary fistula is involuntary

voidance of urine through the vagina. In cases of fecal fistulas the rectal contents gain entrance into the vagina and the vaginal discharge smells of feces.

Small fistulas may heal, cicatrise spontaneously, if the wall of the urinary bladder surrounding them contains no necrotic tissue. For this purpose it is necessary that the walls of the urinary bladder should not stretch too much during the period of healing of the fistula. This is achieved by introduction of a so-called *constant catheter* for a relatively long period. In these cases a long elastic catheter is used; the catheter is introduced into the urinary bladder and fastened with adhesive plaster to the mons Veneris and the thighs, its free end being immersed in a vessel (bottle) into which the urine continuously drips.

If the fistula does not close up spontaneously, the patient requires an operation. The success of the operation very largely depends on the preoperative preparation and postoperative care of the patient (p. 308).

It is the duty of the midwife and nurse to prevent formation of fistulas. Administration of obstetric and gynecological aid to all women and active health education work conducted by the intermediate medical personnel among the female population (this applies primarily to the countryside) are very helpful.

TUMOURS

Tumours may originate in any part of the female genitalia; most frequently they develop in the uterus and ovaries. Depending on their structure and development, as well as the extent to which they actually threaten the life of the patient, all tumours are divided into benign and malignant.

Benign tumours develop and grow slowly, do not extend to other organs (produce no metastases) and do not lead to rapid emaciation of the patient.

Malignant tumours, on the contrary, are distinguished for their relatively fast growth; they cause the women great suffering and lead to extreme emaciation, to the point of *cachexia*. The cells of a malignant tumour rapidly grow into adjacent tissues and organs and are transported by the blood or lymph, for which reason new malignant tumours may form in any other place (metastases).

Benighn Tumours

Cystoma

Cystomas most frequently develop in the ovaries and sometimes grow to enormous sizes.

As the contents of the cystoma accumulate, its cavity enlarges and its walls thin out, the result being something like a liquid-filled bladder. Cystomas usually have a smooth surface, although sometimes outgrowths in the form of papillas appear on the surface of their (external and internal) walls; these are so-called *papillary cystomas of the ovaries.*

Some cysts originate in glands (Bartholin's, etc.). In such cases, owing to obstruction of the gland's duct, usually because of an inflammatory process, the growth of cysts is connected with accumulation of secretion in them.

Dermoid cystomas develop mainly in the ovaries. Excised tumours contain a thick, fatlike substance—the secretion of sebaceous glands; very frequently they also contain hair, teeth and certain other structures.

Sometimes the walls of cystomas undergo malignant degeneration, in which cases the course of the disease sharply alters.

Small cystomas very often remain unnoticed since they produce no painful sensations. Large cystomas press against the adjacent organs and cause pain. Attacks of particularly sharp pains occur in cases of *torsion of the pedicle of the cystoma.* If the pedicle is relatively long, the tumour may extend beyond an intestinal loop and tie it off; torsion of the pedicle may cause intestinal obstruction and produce the characteristic symptoms, namely, distention of the corresponding half of the abdomen, pain, absence of stool even after repeated enemas and, lastly, vomiting the colour of coffee grounds.

Cases of torsion of the pedicle of the cystoma require immediate surgical intervention. The patient in whom this disease is suspected must be urgently and with all caution transported to a hospital.

Cystomas are diagnosed during vaginal examination.

All cystomas have to be removed surgically. It is important to remember this because cystomas often undergo malignant change.

Fibromyomas

Fibromyomas usually develop in the uterine wall, the tumours consisting of muscle and connective tissue and containing a well developed network of blood and lymphatic vessels. Fibromyomas of the *corpus uteri* and of the *cervix uteri* are distinguished according to their location, the latter being observed much less frequently.

There are three types of fibromyomas of the corpus uteri:

1) tumours growing to the exterior from the uterine wall and located under the peritoneal covering of the uterus; these are so-called *subperitoneal* or *subserous fibromyomas*;

2) tumours growing in the uterine wall without protruding either to the interior or the exterior; these are *interstitial fibromyomas*;

3) tumours growing from the uterine wall, extending into the uterine cavity, pushing and thinning out, and sometimes rupturing the mucous membrane of the uterine wall; these are *submucous fibromyomas.*

Fibromyomas of the uterus occur rather frequently; they usually develop in 35-40-year-old, but sometimes also in younger, women. These tumours form most frequently in nulliparas or in women who have born but few children.

The *symptoms* characterising fibromyomas depend on the nature of the tumours, their size and location. Interstitial fibromyomas produce the fewest symptoms and often do not discomfort the woman at all. Only when the tumours become very large do they press against the adjacent organs and cause pain. It is with this complaint that women apply to maternity health centres. Sometimes interstitial fibromyomas may be the cause of excessively profuse and prolonged menstruations which impel the women to consult a physician.

If subperitoneal fibromyomas are not very large, they cause no pain, but if they grow very large they distend their peritoneal covering and produce pain.

Submucous fibromyomas run a much graver course. Extending into the uterine cavity these tumours push and thin out the mucous membrane of the uterus, thus producing profuse hemorrhages not only during menstruation (menorrhagia) but also independent of the menstrual period (metrorrhagia). In such cases women complain of disorderly menstruations. Similar hemorrhages may be caused by uterine polyps which constantly irritate the mucous membrane and prevent uterine contractions.

Treatment. Small fibromyomas accidentally discovered during examination require no treatment if they do not discomfort the women. Such patients must only show themselves to a physician every now and then so that suitable measures may be taken in cases of aggravation. Small fibromyomas disappear with the onset of the menopause when ovulations and menstruations cease. However, if fibromyomas grow very large and cause pain they have to be excised.

Interstitial fibromyomas attended with profuse hemorrhages require suitable treatment. Until the age of 40, if these tumours are small, hemostatics and endocrine preparations are at first recommended. However, if the hemorrhages continue and even increase despite rather prolonged administration of these preparations, surgical removal of the tumours is advisable. In cases of ineffective administration of hemostatics to older women treatment with roentgen rays may be resorted to. This hastens the onset of the menopause, which leads to diminution and even disappearance of the tumours.

Submucous fibromyomas which cause prolonged uterine hemorrhages are subject to surgical removal.

Malignant Tumours

Cancer

The most frequent malignant tumour of the female genitalia is **cancer of the uterus**, cancer of the cervix uteri being observed much more frequently than cancer of the corpus uteri. Of every 100 cases of cancer of the uterus 94-95 are

cases of cancer of the cervix uteri. Cancer affects mainly elderly women, although cancer of the uterus is also not infrequently discovered in relatively young women.

The main factor in the control of this grave disease is its earliest possible diagnosis and early intervention. It is relatively easy to diagnose cancer of the uterus because the uterus, its cervix in particular, is more than any other organ accessible to examination (manual examination, exam-

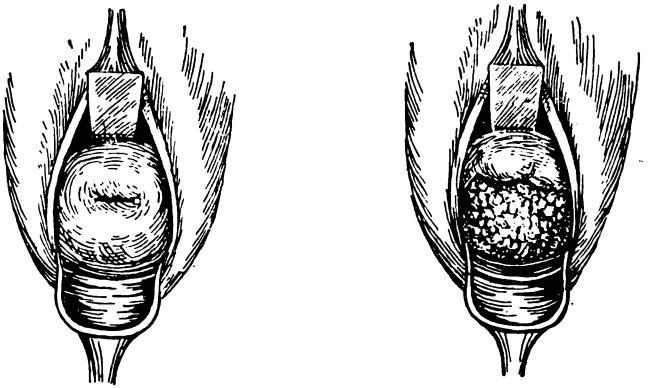


Fig. 204. Cancer of the cervix uteri. Left—healthy cervix, right—cancer of the posterior cervical lip

ination by means of vaginal speculums, biopsy, diagnostic curettage and other methods).

The sooner modern methods of treating cancer are used, the greater are the possibilities of cure.

Cancer of the cervix uteri (Fig. 204). The symptoms of incipient cancer of the cervix uteri are at first so negligible that the patients do not even pay any attention to them. There are no pains, and only the discharges somewhat increase; then the leukorrhea, which is at first noted only for its quantity, begins to contain blood; sometimes the period of menstruation increases, or 1-2 days after menstruation sanguineous discharges reappear; sanguineous discharges are also observed in the intervals between the menses; hemorrhages not infrequently occur after coitus and in difficulties of defecation.

Vaginal examination with speculums in cases of *incipient cancer* of the cervix uteri reveals *erosion* in the region of the external os uteri.

Cancerous erosion is an ulcerated, slightly tuberous and dense surface on some part of the external os uteri; any mechanical injury to this part gives rise to a hemorrhage. Sometimes nothing else (inflammation in the cervical canal, discharges) is discovered besides this ulcerated surface.

Any little ulcer or considerable redness in the region of the external os must impel the nurse immediately to refer the woman to a physician. In order to discover an erosion it is necessary to conduct the examination by means of speculums in all cases, regardless of suspicion of cancer. An exact diagnosis is made by histological examination of a piece of affected tissue (biopsy).

Women, especially those who had leukorrhea before, at first usually attach no particular importance to its increase and even to the appearance of sanguineous discharges. Subsequently, the process advances, the discharges assume a yellowish, brownish or bloody colouration, and, when decomposition of tissue begins, the discharges become brownish. This picture indicates a far advanced cancerous tumour. Owing to the bacteria they contain, the discharges begin to emit a fetid odour; the approach of the patient is sometimes alone enough to determine the character of the disease. In these far advanced cases vaginal examination reveals that the entire cervix uteri is enlarged and tuberous, and that the tumour extends to the adjacent vaginal walls and easily bleeds when touched with a finger; pieces of necrotic tissue separating during examination remain on the fingers; when examined with speculums the cervix looks like cauliflower. Subsequently, the process extends to the parametric connective tissue, involves the passing nerve trunks and therefore causes excruciating pains. The cancerous tumour also extends to the adjacent organs—urinary bladder and rectum; fistulas appear and metastases in distant organs are formed. Owing to the poisoning of the organism with the products of decomposition of the tumour, grave progressive *cachexia* (general emaciation) develops. Untreated cancer of the cervix uteri leads to death within 12-18 months. It follows that women must consult a

physician as soon as the very first signs of this disease appear. This applies primarily to elderly women, especially those in whom sanguineous discharges have recurred at least once after cessation of menstruations.

Cancer of the corpus uteri. Cancer of the corpus uteri runs a much slower course and for a long period does not extend beyond the uterus. In these cases of cancer disorderly sanguineous discharges from the uterus are observed, or they appear at a time when the menstruations have already ceased (menopause). Cancer of the corpus uteri is diagnosed by histological examination of a biopsy specimen from the uterine mucosa.

Treatment. The basic method of treating cancer of the uterus is an excision of the entire uterus with the surrounding tissues. However, this method is indicated in cases of incipient cancer; in all other stages of cancer a surgical operation is no longer indicated and treatment is conducted with roentgen and radium rays. It should be noted that in cases of neglected cancer this treatment often also fails to produce positive results.

Owing to the ability of cancer to extend to the surrounding tissues and adjacent lymph nodes, it is not always possible to remove all suspicious tissues surgically; cancer cells remain in the organism and not infrequently a relapse of the disease occurs sometime after the operation. This has given rise to so-called *subsequent treatment* with roentgen rays or, as it is called, prophylactic irradiation; after the operation all patients are subjected to roentgen irradiation which destroys the remaining cancer cells. Operations with such subsequent irradiation produce better remote results.

Cancer of the ovaries. Cancer of the ovaries occurs less frequently than cancer of the uterus and it is much more difficult to diagnose. It produces early metastases to distant organs. In such cases tumours are best discovered by bimanual examination. Such patients are treated mainly surgically.

Cancer of the vagina and the external genitalia. This form of cancer is observed still less frequently than cancer of the ovaries.

Sarcomas

Sarcomas of the uterus occur much less frequently than does cancer of the uterus. Sarcomas are noted for their very rapid growth and extremely malignant course, often producing metastases in distant organs and, unlike cancer, spreading mainly through the blood vessels rather than lymphatically. The ovaries may also be affected with sarcoma.

Sarcomas are observed in younger women than is cancer. Since these tumours grow very rapidly, surgical intervention must be resorted to as early as possible. If it is already too late or impossible to operate, the patient is subjected to roentgen therapy; in cases of sarcoma this method produces relatively good results.

Control of Malignant Tumours

Considerable progress has been achieved in the treatment of cancer of the female genitalia owing to improvements in the surgical and radiation methods; however, this is not as yet enough. Cancer must be controlled not only by improving the treatment which is, of course, necessary, but mainly by *timely discovery* of early, incipient forms of this disease.

Prophylactic gynecological examinations. The patients alone and the fact that they will notice any deviations in the condition of their genitalia cannot be depended upon. Cancer is too insidious a disease and for a very long time does not in any way manifest itself. This is why periodic gynecological examinations of all women 30 years old and older and of women in whom the menopause has already begun are necessary. Such prophylactic examinations of women are carried out in gynecological practice at least once a year.

The nurse actively helps the physician in organising and conducting these examinations in industry and at maternity health centres (p. 35). During these examinations the breasts are also examined because of the cancerous neoplasms sometimes found in them. If sections of induration, even painless, are found in the breast, as well as en-

larged axillary lymph nodes, the woman must immediately be referred to a physician.

The genitalia are infallibly examined by means of speculums. Women in whom erosions on the cervix uteri have been discovered or irregular sanguineous discharges from the uterus are observed are immediately referred to a physician or an oncological clinic. Timely diagnosis and treatment of cancer prevent a lethal outcome of the disease.

Nurses are not required to diagnose cancer, but they can and must palpate indurations in the breasts, notice erosions of the cervix uteri and carefully question the women. If cancer is discovered in at least one of the many women referred to the physician by the nurse, the nurse will have served her purpose.

No suspicions must be voiced to the patient prematurely; the diagnosis of "cancer" is a severe psychic trauma for women even if it is not subsequently confirmed. Being considerate of the patient, the nurse must at the same time insistently, but very tactfully, demand that the woman should consult a physician. Moreover, the nurse must make sure that all the women she had referred to a physician have actually consulted him, and must display special concern for those who have not. The nurse's insistence may save lives of light-hearted women who do not adequately take care of their own health.

URGENT AID IN GYNECOLOGICAL HEMORRHAGES

In gynecological practice there are cases which require first aid before radical treatment, i.e., before hospitalisation. These include primarily *traumatic injuries* to the genitalia, for example, hemorrhages from ruptures of the hymen, vaginal ruptures during extremely passionate coitus or as a result of falling on a sharp object, ruptures of the clitoris, etc. All these injuries are attended with rather profuse bleeding or formation of large hematomas (blood tumours) which may at any time rupture and produce a profuse hemorrhage. In such cases it is first of all necessary to ask the patient how her hemorrhage began; in most cases it is thus possible to establish the cause.

Hemorrhage from the internal genitalia, not connected with an interrupted or continuing pregnancy, may be observed in disorders of the ovarian function, inflammation of the internal genitalia, fibromyomas and cancer. As a rule, all such patients have to be immediately sent to hospital.

The nurse must arrest the hemorrhage before arrival of the physician or before hospitalising the patient. For this purpose she uses a tight tamponade and a pressure bandage of several layers of gauze applied to the external genitalia and fastened to a circular bandage—belt (in front and in the rear).

In cases of hemorrhages from lacerations of the clitoris the latter is tightly pressed with the fingers against the symphysis, sterile gauze napkins being applied to the clitoris.

In profuse hemorrhages from vaginal ruptures the vagina is packed with sterile bandages 10-12 cm wide and made of three layers of gauze (see Fig. 179).

The tamponade must usually be performed by a physician who very strictly observes the rules of asepsis and antisepsis since the subsequent results of the intervention depend on whether or not the wound is infected. If infection gains entrance into a bleeding wound, grave diseases, which sometimes jeopardise the patient's life, are possible.

Antisepsis is achieved by sanitary treatment of the external genitalia, cleanliness of the hands, and use of sterile bandage and sterile speculums, whereas a proper tamponade requires *even and tight* packing of *layer after layer* of gauze into the vaginal fornices around the cervix uteri and fixation of the uterus by bandaging the waist (see Fig. 181). Only a tight tamponade of the entire vagina proves effective, and, if only the vaginal outlet is packed with gauze, blood continues to accumulate in the interior, behind the tampon.

After tightly packing the vagina, the patient's legs are brought close together or crossed (sometimes they may even be tied), the patient is put to bed and a weight (bag with sand) or ice is placed on the lower part of the abdomen. If necessary the woman may be transported to the nearest hospital. The packing may be kept in no more than 12 hours and must then be carefully removed. In such cases the urine is drained with a catheter.

CHAPTER XV

PREPARATION FOR GYNECOLOGICAL OPERATIONS

The preparation for operations consists in sterilising the materials and preparing the suturing materials, instruments and the patient.

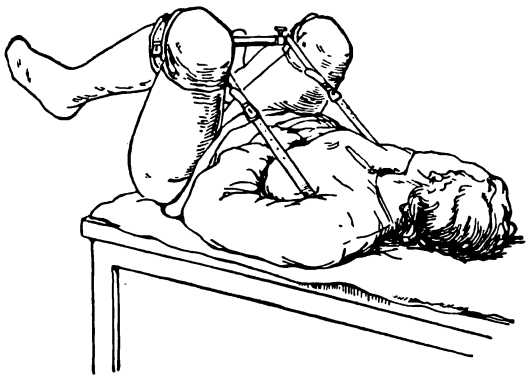


Fig. 205. Patient in position for vaginal operation. Legs are held in place by leg-holders

Of course, first of all the nurse must firmly learn the rules of personal hygiene and observe them both at home and at work. She must also know how to scrub her hands properly, or she must not be admitted to the operating room.

Operations through abdominal incision are performed on an operating table which makes it possible to impart to

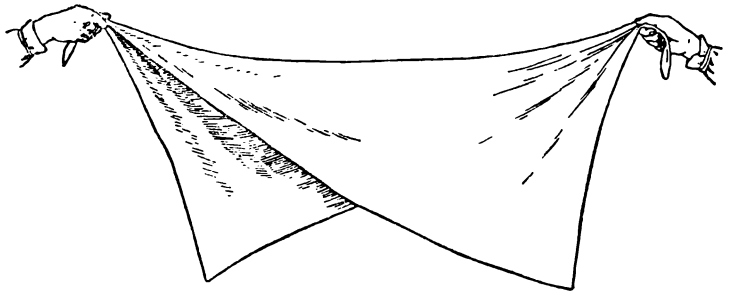


Fig. 206. Folding a sheet diagonally the nurse and attendant hold it at opposite ends and simultaneously spin it in the same direction

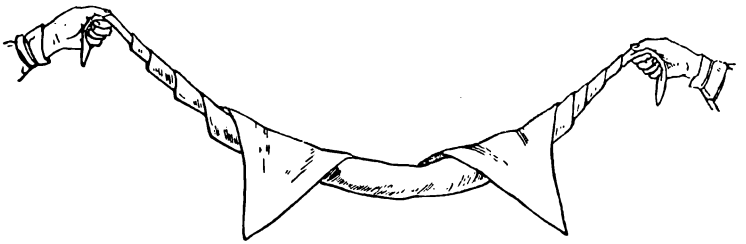


Fig. 207. As a result of the spinning the sheet looks like a rope

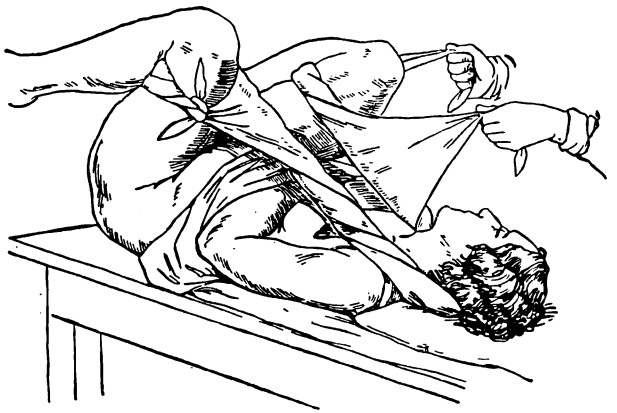


Fig. 208. The middle of the twisted sheet is placed under the patient's neck and the ends are tied under the knees

the patient a position with raised pelvis and lowered upper half of the body—Trendelenburg's position.

Operations through the vagina are performed in a gynecological chair or on an operating table, the patient lying on the edge of the table in a position with the thighs pressed against the abdomen, her legs supported under the knees by a special leg-holder (Fig. 205). If no leg-holder is available, one can be made from a sheet, as shown in Figs. 206, 207 and 208.

PREPARATION OF THE PATIENT FOR AN OPERATION

The preparation of the patient for a gynecological operation essentially begins from the moment of her admission to the hospital, from the moment of her registration. Cleaning up, shaving the hair on the external genitalia and abdomen, changing the linens, watching the patient's condition and behaviour, checking the temperature and pulse for several days, blood and urine tests, and medical examinations are all constituent elements of the patient's preparation for the operation; the preparation must also include considerate treatment of the patient by the medical personnel, the nurse in particular, while the patient must learn to respect and trust the nurse. The atmosphere in which the woman finds herself the first time must be encouraging. The foregoing factors are extraordinarily important, since the patient's tranquillity and confidence before the operation are a guarantee of its favourable outcome.

On the eve of the operation the patient is given no food after lunch; on the day of the operation the patient does not eat, but may drink (tea).

On the day preceding the operation the patient takes a general bath if there are no special contraindications. Very weak patients are sponged in bed with alcohol or cologne diluted with water. In the evening the patient is given a laxative (liquorice powder or senna) by the physician's prescription.

The patient's temperature must be measured particularly carefully in the evening preceding the operation and, if the temperature is elevated, the nurse must report it

to the physician on duty without, however, discontinuing the preparation of the patient for the operation.

It is advisable to give the patient bromural (bromisovalum), barbamyl (amytal sodium) or luminal for the night to make her sleep. In the morning, before the operation the patient is administered an enema. The patient may also be allowed a cup of strong tea.

If the operation is to be performed under general anesthesia, the patient is injected 1 ml of a 1 per cent morphine solution and 1 ml of a 0.1 per cent atropine solution one hour before the operation. Before the operation the patient's urine is drained with a catheter. The abdominal wall or vagina, or both, are prepared, depending on the operation, on the operating table.

The *abdominal wall* is treated with alcohol and then with iodine. There are also other methods of preparing the abdominal wall (with thymol, ammonia, etc.).

The *vagina* is irrigated with a disinfectant (potassium permanganate, lysoform) and is treated with the aid of speculums, first with a tampon soaked in alcohol and held with a dressing forceps, and then with a tampon soaked in iodine and also held with a dressing forceps.

The vagina is particularly carefully treated during the preparation of cancer patients. Cancerous tumours abound in pathogenic microbes, including streptococci, for which reason the cancer focus must be prepared particularly carefully. The vagina is douched with a mercury bichloride solution for several days preceding the operation. Before the operation, following the foregoing preparation of the vagina, the cancerous ulcer is additionally cauterised with a 10 per cent silver nitrate solution. Sometimes, in cases of a decomposing cancerous ulcer, the physician cauterises the latter with the aid of thermocautery. The thermocauterised tissues become dehydrated, the protein coagulates, local necrosis takes place and a white or grey scab is formed.

The nurse also prepares everything that is necessary for *anesthesia*—the mask, ether, tongue-holder, mouth dilator, filter paper to determine the quality of the ether, and vaseline.

A basin and 2-3 clean towels must be prepared in case the patient should vomit.

Everything required for infusion of physiologic saline solution or glucose (Bobrov's apparatus, needles, solution), and for subcutaneous administration of cardiacs (camphor, caffeine, a sterilised syringe with tested needles), as well as an oxygen tent and a system for blood transfusion, must be kept in readiness.

MODEL SET OF INSTRUMENTS

For Laparotomies

Instruments and Quantity		Instruments and Quantity	
Abdominal speculums of different sizes	5	Grooved director	1
Retractors	2	Bumm's curet	1
Forceps, long	4	Dressing forceps	10
„ short	6	Catheter, male	1
„ anatomical	4	„ female	1
„ surgical	4	Depressor, spoon-shaped	1
Kocher's forceps	20	Dechamps' needle	1
Péan's forceps	15	Needleholders	3
Michel's clamps	40	Needles, various	20
Forceps for applying the clamps	2	Cooper's scissors	2
Scalpels	3	Doyen's „	1
Mjuso forceps	3	Straight „	3
Bullet forceps	3	Spatula	1
Pincers	6	Intestinal clamp	1
Ovarian forceps	3	Uterine forceps	4
Uterine probe	1	Doyen's perforator	2

For Vaginal Operations

Doyen's speculums, different sizes	3	Grooved director	1
Sims's speculums	4	Bumm's curet	1
Forceps, long	4	Dressing forceps	10
„ short	4	Catheter, male	1
„ anatomical	4	„ female	1
„ surgical	10	Dechamps' needle	1
„ for applying clamps	2	Needleholders	3
Kocher's forceps	15	Needles, various	20
Péan's forceps	20	Cooper's scissors	2
Scalpels	3	Doyen's „	1
Mjuso forceps	10	Straight „	3
Bullet forceps	10	Spatula	1
Pincers	6	Intestinal clamp	1
Ovarian forceps	3	Elevators, different sizes	3
Uterine probe	1	Lateral speculums, continuous	2
		Lateral speculums, fenestrated	2

CHAPTER XVI

POSTOPERATIVE CARE

CARE OF PATIENTS AFTER LAPAROTOMIES

It is the nurse's duty to care for the patients after operations.

The nurse must be very well trained in the techniques of postoperative care, must know what operation was performed on the patient and the typical picture of the postoperative period of different operations, notice in due time even slight deviations from the normal, report them to a physician and take urgent measures.

As in the preoperative ward, the postoperative ward must also maintain the strictest *therapeutic and protective regimen* (cleanliness, quiet, friendly and considerate treatment of the patients, painless administration of the physician's prescriptions and exclusion of everything that may produce psychic trauma).

Active behaviour of the patients after operations is one of the essential factors in the prevention of various complications; it prevents complications in the lungs, eliminates urinary retention and in combination with early rational feeding after laparotomies prevents such complications as postoperative intestinal paresis, flatulence and thrombosis of the peripheral veins.

The active method of managing the postoperative period consists of a complex of measures—early exercise of the patient in bed, early rising from bed, early feeding and kinesiatrics.

From the operating table the patient is carefully transported to the ward on a wheel-stretcher and is cautiously

placed in bed. As soon as the patient has had a good rest, i.e., 4-5 hours after the operation, she may lie in bed as she pleases, move in bed freely and perform breathing exercises. However, the character and course of the operation, and the patient's condition and individual peculiarities must be considered in each individual case. The nurse receives the requisite instructions from the attending physician.

To begin with, the nurse must see to it that the *bed* in which the patient is placed after the operation is warm, for which purpose the bed prepared beforehand must be heated with hot-water bottles; she must also make sure that the ward to which the patient is brought after the operation is clean, well ventilated and sufficiently warm. During the first hours following the operation the nurse must continuously stay at the patient's bedside.

The nurse must watch that the patient awakening after anesthesia does not fall out of bed. In cases of vomiting the nurse must see that the patient does not swallow the vomitus, for which reason the patient's head must be placed low (without a pillow and turned to her side).

Either a weight (a bag with sand) or cold is applied to the abdomen in the region of the wound, according to the physician's prescription. In the evening following the operation the patient may be turned on her side. The best way to prevent postoperative pneumonia is to apply cupping glasses to the chest and back and to administer camphor subcutaneously.

In the case history the nurse makes a daily note of whether or not the patient urinated, and of the patient's temperature and pulse. If the patient does not urinate spontaneously, catheterisation has to be resorted to by prescription of the physician (see p. 171).

On the second day after laparotomies patients usually feel bad and complain of pain in the wound; abdominal distention begins. The patient must be turned from side to side (by permission of the physician). In cases of flatulence the patient is administered a colonic tube, and, if this does not help, a siphon enema (see p. 332) with a hypertonic solution. From the second day patients usually urinate spontaneously, otherwise 1 ml of pituitrin is ad-

ministered subcutaneously and warm water is poured on the external genitalia; if this does not help, catheterisation with observance of every precaution is resorted to. In cases of frequent catheterisation it is recommended, after draining the urine, immediately to irrigate the urinary bladder with 1 litre of a 2 per cent sterile boric acid solution (by prescription of the physician). The irrigation is performed from a sterilised Esmarch's can through a sterile catheter introduced into the urinary bladder.

During the first 2-3 days the patient must be given liquid food (broth, soup, jelly and fruit juices) and fruit (oranges, tangerines).

On the third day the patient's condition noticeably improves; the patient is more cheerful and feels only a pain connected with abdominal distention; towards the evening she is administered a usual enema. The patient may be allowed chicken rissoles, minced meat, mashed potatoes, fresh and stewed fruit.

On the 3 or 4 day the patient feels good if the postoperative period is normal. The physician allows her to sit up, depending on the gravity of the operation. The patient is gradually transferred to the common diet.

If the patient may not, for some reason or other, rise from bed soon, she stays in bed for about 6 days, after which, if everything is normal, she is allowed to rise, her abdomen being bandaged beforehand. The clamps and stitches are removed on the 8th or 9th day.

On that day the patient is administered an enema in the morning and the nurse prepares the instruments for removing the clamps (forceps and scissors). During the day on which the clamps are removed the patient is not allowed to sit, whereas on the following day she may sit up with her abdomen bandaged and, in some cases, even walk.

Between the 10th and 12th days the patient is discharged from the hospital.

In patients operated for cancer the postoperative period is usually more trying. Owing to considerable surgical trauma to the perivesicular connective tissue the patients frequently do not urinate spontaneously and it is necessary to resort to catheterisation with subsequent irrigation of

the urinary bladder, often as long as the patient is bedridden. In such cases the nurse must particularly carefully watch the patient's urine, measure its daily amount and the liquid consumed, reporting the results to the physician during his morning rounds.

A bedridden patient must be turned from side to side because the administration of large quantities of the anesthetic substance in connection with the long duration of the operation on cancer predisposes to postoperative pneumonia.

Care of the skin (rubdowns with camphor alcohol or toilet water) and the oral cavity is very important. A rubber ring is placed under the patient to prevent formation of bedsores.

The former belief that the patient must lie motionless after a laparotomy, and the longer the better, is now rejected. Early vigorous movements, deep breathing and active work of the muscles are necessary, because they prevent pulmonary congestion, improve the patient's blood circulation and general condition and lead to recovery more rapidly.

Medical gymnastics. While certain patients are sometimes averse to early rising from bed, medical gymnastics are undoubtedly acceptable to all; it must therefore be introduced into the practice of all gynecological hospitals, where exercise during the postoperative period must become an obligatory element of the patient's regimen, as it also is after childbirth (see p. 183).

The exercises and their duration must correspond to the character of the operation and the patient's condition, for which reasons they are regulated by the physician.

CARE OF PATIENTS AFTER VAGINAL OPERATIONS

The postoperative period in cases of vaginal operations is, as a rule, less trying than that in cases of laparotomies.

The care of patients has its peculiarities. To begin with, after vaginal operations almost all patients have tampons in the vagina and the tampons must be removed either towards the evening of the operating day or on the second or third day by instructions of the surgeon. The nurse must

be aware of this and without waiting for any reminders must summon the physician for the purpose of removing the tampons.

After *perineal* operations it is very important to keep the sutures clean; cleanliness of the sutures is maintained by changing sterile applications at least every three or four hours, a contaminated application is a focus of multiplication of bacteria.

The patient must lie in bed with her legs tied in the knees.

To prevent divarication of the sutures, the patients are not administered any enemas and attempts are made to retain the stool until the fourth or fifth day after the operation. During the first four days the patient receives 3-5 drops of *tr. Opii simplicis* (*opium tincture*) a day and must consume only liquid food. In the evening of the fifth day the patient is given a mild laxative.

Perineal stitches are usually removed on the sixth day after the operation, the patient remaining in bed. On the tenth day the patient is allowed to begin walking about because a sitting position creates considerable tension in the pelvic floor and gives rise to pain in the perineum. Before discharge the patient is given instructions concerning her behaviour at home.

Special care is required after plastic operations *on the rectal sphincter*. In such cases the patient is given liquid food for seven days after the operation and the stool is retained by oral administration of opium. A laxative and an oil enema (carefully!) are administered on the seventh day to facilitate defecation.

Patients operated on for *vesiculovaginal fistulas* require particular care on the part of the nurse, since in such cases postoperative care not infrequently determines the outcome of the operation. The nurse sees to it that the catheter is properly inserted and that the patient maintains a correct position. The most favourable position of the patient after the operation is prescribed by the physician, depending on the localisation of the fistula.

The external end of the catheter must be constantly kept in the urinal. The nurse examines the catheter every two hours to see if any urine flows through it. If the catheter has fallen out of the urethra or has been stopped up by

blood clots or salts accumulated in its lumen, it is necessary immediately to inform the physician about it so that the catheter may be checked and, if need be, replaced. Some gynecologists prescribe usual catheterisation of the urinary bladder (the urine being drained every three hours) instead of a permanent catheter, thus preventing distention of the urinary bladder.

CHAPTER XVII

NONOPERATIVE (CONSERVATIVE) METHODS OF TREATING GYNECOLOGICAL PATIENTS

BIOLOGICAL METHODS OF TREATMENT

The biological methods of treatment include administration of vaccines, serums, protein therapy, blood transfusions, autohemotherapy, hormone therapy, tissue therapy, etc.

Vaccines are used in gynecology for various inflammatory diseases; in cases of gonorrheal infection vaccination with a so-called gonococcus vaccine is most frequently administered.

Autohemotherapy, i.e., subcutaneous administration of the patient's own blood, is prescribed in cases of various inflammatory diseases of the female genitalia. From 5 to 10 ml of blood is taken from the patient's ulnar vein with a sterilised 10-15-g syringe and is injected with the same syringe under the skin of the anterior surface of the thigh or into a buttock; these parts of the skin must be disinfected with alcohol and iodine beforehand. Such injections are usually repeated several times at intervals of one or two days.

Transfusion of blood taken from another person (donor) has gained wide currency. This method is usually resorted to in cases of *acute anemia* following considerable hemorrhages. Before transfusion the patient's blood group is ascertained and 200 ml of blood or more taken from a donor of the same blood group is infused into the patient's ulnar

vein. Preserved donor's blood of a corresponding group may be used.

All hospitals and maternity homes always have preserved blood of all groups and a system for blood transfusion in readiness so that any patient may be administered a blood transfusion at any time. A blood transfusion quickly raises the percentage of hemoglobin and stimulates the patient's *hemopoiesis.*

Protein therapy consists of subcutaneous administration of animal milk and serum. Sterilised (boiled in a test tube) milk is administered intramuscularly in a dose of 5-10 ml at intervals of 3-4 days.

Normal horse serum is sometimes used; 5-30 ml of the serum is administered intramuscularly at 3-day intervals.

Hormone therapy consists of administration of preparations of endocrine glands. Ovarian preparations (folliculin and progesterone) or a testicular preparation (testosterone) are most frequently used in gynecological practice.

Folliculin is a preparation from the follicular fluid of the ovary. It is used to stimulate the function of the gonads in cases of underdevelopment of the sexual system, very scant menstruations, prematurely withering ovaries (early climacteric) and in a number of other diseases.

Oil solutions of folliculin (*Folliculinum oleosum*) with an activity of 1,000 u. and more per 1 ml are prepared. The solutions are administered intramuscularly in doses of 1,000-10,000 u. Synthetic preparations of this hormone—synestrol and diethylstilbestrol in tablets containing 10,000-20,000 u. each—are also manufactured. The tablets are taken per os in doses of one or two a day.

Progesterone is a synthetic hormone of the *corpus luteum.* It is administered intramuscularly in the form of an oil solution containing 5-10 mg of the preparation per 1 ml in cases of functional uterine bleeding and threatened abortion. The dose of the preparation is 5-10 mg daily or every other day.

Pregnin is another synthetic preparation; it is given in tablets of 5-10 mg two or three times a day. The tablet is placed under the tongue where it dissolves and is absorbed through the oral mucosa.

Testosterone (2.5 per cent, 1 g per ampule) is usually administered in cases of malignant tumours.

Pituitrin is a preparation from the extract of the posterior lobe of the hypophysis. In obstetric practice it is used as an agent which produces contraction of the uterus and leads to arrest of bleeding. It is also used as a hemostatic in gynecology, in cases of uterine hemorrhages, especially of the nature of menorrhagia. It is administered subcutaneously in a dose of 1 ml.

Tissue therapy consists of implantation of specially treated pieces of animal or plant tissues. This method was proposed by the outstanding Russian scientist V. Filatov. In the female organism such tissue causes formation of substances which stimulate the metabolic processes and enhance the reactivity of the whole organism.

Since an inflammatory process in the female genitalia is a disease of the whole organism, it is clear why treatment with tissue implantation produces favourable results. In gynecological practice this method is used mainly in cases of inflammatory diseases of the uterine appendages in different stages, presence of adhesions and infiltrates. Placental tissue is most frequently used for implantation.

LOCAL APPLICATION OF COLD AND HEAT

As a therapeutic agent *cold* is used for local cooling of the tissues; not only the skin, but also deeper tissues and organs are cooled. By causing constriction of small vessels cold thereby reduces the flow of blood through them, decreases absorption and restricts the inflammation; it also acts as an analgesic.

An ice bag is used in cases of acute inflammation of the pelvic organs and the peritoneum. For this purpose ice is broken up into small pieces and the ice bag is filled half-full; the air is released from the ice bag and the lid is screwed on. To avoid excessive cooling the ice bag is placed on a towel and not on the bare skin. The ice bag may be kept on for no more than one hour, until the appearance of redness on the skin, after which it must be removed for half an hour.

If the patient cannot hold an ice bag on her abdomen

because of her disease, for example, acute peritonitis, the ice bag must be suspended so that it does not press with its weight on the abdomen.

Application of cold is contraindicated in cases of inflammation of the urinary tract and the intestines (pyelitis, cystitis, colitis).

Cold is usually applied as long as the acute symptoms persist, i.e., high fever, sharp pains, edema, etc. As soon as the acute period is over, applications of heat are prescribed; these applications intensify the blood circulation, favour resorption and, not infrequently, elimination of the inflammatory process.

Heat is most frequently used in the form of hot-water bottles and hot compresses.

A *hot-water bottle* is a rubber bag with a threaded plug; the bag is filled with hot water (60-50°C). Before the plug is screwed in, the air from the filled hot-water bottle must be released.

To avoid burns, a towel is placed under the hot-water bottle. As soon as redness appears on the skin, the hot-water bottle is removed and is reapplied within an hour. Uterine bleeding and malignant neoplasms contraindicate application of hot-water bottles.

A *hot compress* consists of four layers: 1) a napkin moistened in water at room temperature; 2) a layer impermeable to air—a compress oilcloth or waxed paper; 3) a layer of cotton and 4) a bandage to keep the compress in place. Each overlying layer must be 1 cm longer and wider than the underlying layer. A compress is applied for about 10-12 hours and is changed no more than twice a day. Upon removal of the compress the skin is wiped with a dry towel and covered with something warm to prevent it from cooling.

A hot compress acts as a resorbent and an analgesic.

HYDRO- AND PELOTHERAPY

Vaginal douching is extensively used in the hospital, the polyclinic and at home. Many women do their own douching without consulting a physician. At first sight this seems to be a harmless procedure, and yet it may prove

harmful if it is incorrectly and inappropriately used. Gynecological patients must therefore never be administered douches without a physician's prescription.

Esmarch's glass can, containing 6-8 glassfuls of water, and a rubber tube must be used for douching. Tin vessels are unfit for this purpose. Tin rusts from the action of the disinfectants used for douching and the rust produces chem-

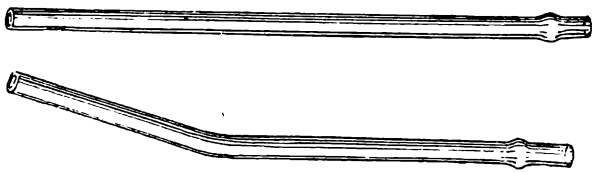


Fig. 209. Glass nozzles for vaginal douching

ical compounds which are not always harmless to the organism; moreover, tin vessels often accumulate dust and dirt which are imperceptible to the eye. On the other hand, a glass vessel may be boiled and easily kept clean.

The rubber tube is 1.5 m long and 1.5-2 cm in diameter; one end of the tube is connected with the outlet of the can and the other with the nozzle.

The nozzle must always be absolutely clean. This requirement is satisfied only by glass nozzles because they can be boiled. No rubber or other nozzle should be used since they accumulate dirt and spoil from boiling. A glass nozzle is a straight or curved glass tube as thick as a finger and open at both ends (Fig. 209). The end of this tube designed for introduction into the vagina varies: it may have an opening with a thickening at the tip and several small holes on the sides. A nozzle with one hole is preferable.

The pressure of liquid during the douching must not be high; the bottle must not be suspended more than 1 m above the bed level. During the douching the patient must lie on her back with her legs somewhat flexed and parted; a bedpan is placed under the patient's pelvis. During douching in a recumbent position the vaginal walls are irrigated better and for a longer time, and after the douching part of the liquid is retained in the vagina. The nozzle must

always be introduced, especially in cases of hemorrhage, along the posterior vaginal wall, simultaneously releasing the liquid; the nozzle must be inserted all the way to the posterior fornix, without stopping halfway, so that the stream of liquid may not gain entrance into the external os and the uterus. The liquid used for douching—boiled water of varying temperature (40-45°C)—is well tolerated by the vaginal walls, but it may burn the skin of the external genitalia and thighs, for which reason the latter must be coated with vaseline before hot douching. After douching the patient must remain in bed for at least half an hour.

The therapeutic effect of douching depends on the temperature of the liquid (contractions of the uterus, hyperemia of the genitalia), on the one hand, and its composition, on the other. Hemostatic douches, douches favouring better resorption (thermal influence), astringent, disinfecting and neutralising the excessively acid reaction of the vaginal secretion (influence of medicinal substances) are distinguished. Hot boiled water to which 40 drops of an iodine tincture per 5-6 glassfuls of water may be added is used for thermal influence; a potassium permanganate solution of a light-violet tint or a weak boric acid solution (2-3 teaspoonfuls per bottle) are used for medicinal influence.

A solution of tannin in wood vinegar (180 g of wood vinegar and 10 g of tannin; one tablespoonful of this solution per one litre of water) or a mixture of zinc sulfate and alum taken in equal proportion (one teaspoonful per one litre of water) are used as astringents, for example in cases of catarrhal inflammation of the vagina and cervix uteri.

Two douches a day are prescribed. The other medicinal substances used for douching are listed on p. 334.

Vaginal irrigations produce a longer effect on the morbid processes deeply localised in the minor pelvis. More water—about 2-3 Esmarch's canfuls—is used for irrigations than is for douching. Irrigations last longer (15-20 minutes). They are also administered to patients in a recumbent position. After an irrigation the patient must rest for at least half an hour. The effect of the irrigation is manifested in a contraction of the uterus as a result of prolonged ther-

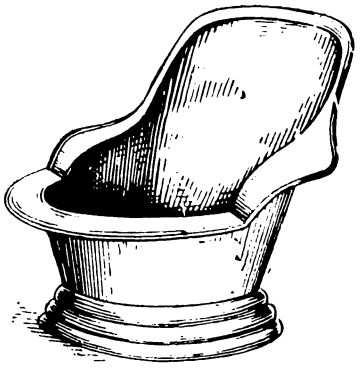


Fig. 210.
Sitz bath. The buttocks, lower part of the abdomen and upper parts of the thighs are immersed in the water, all remaining parts of the body being covered with a blanket

mal stimulation, decrease in pain sensitivity and resorption of the inflammatory infiltrate.

Continuous irrigation lasts still longer (two hours and longer); for this purpose special (Morozov's) nozzles with a reverse flow are used.

During douching and continuous irrigation the patient's condition must be carefully watched. Upon appearance of considerable weakness, a weak pulse and, especially, diminished cardiac activity, this procedure must be immediately discontinued.

Hydrotherapy evokes primarily a cutaneovascular and then a general reaction of the organism. *General and sitz baths* are widely used in the treatment of gynecological diseases.

General baths. The bath-tub is filled so that the patient who is in a half-lying position may be covered with water with the exception of her anterior thoracic wall (region of the heart). General baths are made of ordinary water at a temperature of 35-37°C and are taken for 10-15 minutes. This seemingly harmless procedure requires careful watching by the nurse because the patient may develop *tachycardia* and symptoms of *cerebral anemia* to the point of *syncope*, especially during the first baths after a prolonged and grave disease.

Sitz baths. The patient sits in a special bath-tub (Fig. 210), only the pelvic region, the lower part of the abdomen and the upper parts of the thighs being immersed in water. The patient's feet are placed in a basin with warm water or are warmly wrapped up. The parts of the body which are not immersed in water are wrapped up in a sheet and blanket to avoid cooling and appearance of chills. The water temperature of the bath is 38-39°C.

Mineral baths. In addition to the usual thermal influence, these baths are also designed to produce a chemical effect. Brine, saline-alcaline, sulphur and other mineral baths are used. Mineral waters are also used for vaginal douchings, irrigations and tampons. There are artificial (outside of spas) and natural mineral baths; the latter are taken directly at the source of the mineral waters (spas).

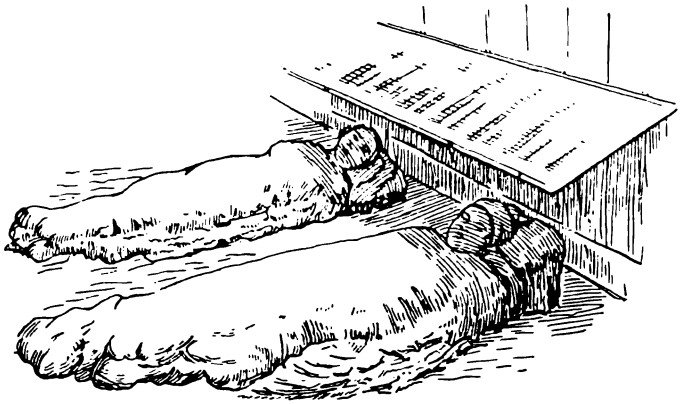


Fig. 211. General, natural, sun-heated mud baths

Sea bathing is a special form of hydrotherapy. It is superior to river bathing because sea water is of a more constant temperature and it contains salts of iodine and iron, as other inorganic admixtures; in addition to this, the sea air produces a general salutary effect on the patients. Sea baths are sometimes prescribed after warm baths for the purpose of hardening the organism.

Pelotherapy. Pelotherapy has long been very widely used in gynecology in the form of general baths and half-baths, waist baths, shorts, and mud tampons inserted in the vagina. The therapeutic effect is produced by the temperature of the mud procedures, as well as the chemical substances contained in the mud. Two types of muds—peat and silt, and two types of mudlike substances—ozocerite and paraffin—are used. In the Soviet Union there are peat muds in Lipetsk and silt muds in Odessa, Saki, etc. There

are pelotherapeutic centres in Yevpatoria, Tinaki, Yessentuki, Zheleznovodsk, Pyatigorsk, Staraya Russa, Krainka and a number of other places.

Heated by the sun natural mud baths usually have a temperature of 47-50°C; patients are covered with the heated mud, according to the type of bath (Fig. 211). Natural mud baths may also be heated artificially (Fig. 212)

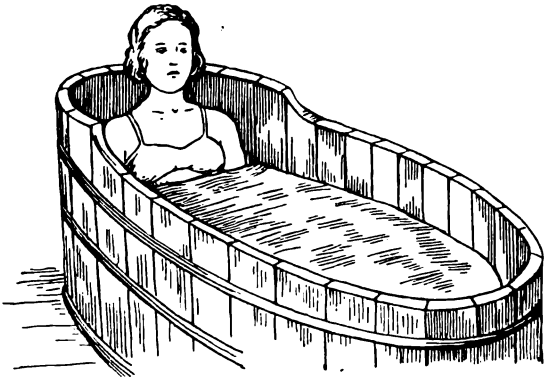


Fig. 212. Artificially-heated mud bath reaching to the waist

Clay therapy in some cases replaces pelotherapy; clay is noted for its high thermal capacity and low heat conductivity. The clay must be thoroughly pulverised, freed from small pebbles and heated to 70°C in a bucket of water, after which it is mixed with a small amount of cold clean clay and applied in thin layers to the skin.

After such procedures the patients take warm showers or baths.

Muds and clay are also used in the form of tampons introduced into the vagina. After removal of the tampons the vagina is douched. Mud is also introduced for therapeutic purposes into the rectum in cases of posterior parametritis and paraproctitis.

Muds may also be administered outside of health resorts; brought from other places they are heated before use. This is so-called pelotherapy outside of health resorts.

Paraffin therapy is extensively used in gynecological

practice. Paraffin is obtained from petroleum; there are white and yellow paraffins, the former being used for treatment. It is usually heated over a water bath; when this is done, care should be taken that no water gains entrance into the paraffin-containing vessel, and that the paraffin does not become ignited when it is heated directly. Paraffin is heated to 70-75°C and then a thin coat of it is applied with a flat painter's brush to the abdomen and lumbosacral region which must first be wiped dry. The paraffin quickly dries and forms a so-called protective layer over which several layers of gauze impregnated with paraffin at a temperature of 55-65°C are applied. Following this the whole part coated with paraffin is covered with wax paper or an oilcloth with a warm blanket on top.

Vaginal paraffin tampons are used as follows: gauze napkins are impregnated with paraffin at a temperature of 55-65°C and are inserted in the vagina for one or two hours, after which they are removed without subsequent douching.

Ozocerite—mountain wax—is found in the earth, in oil deposits. The therapeutic effect of ozocerite is due to its physical, chemical and biological properties and approximately corresponds to that of pelo- and peat therapy.

Ozocerite is heated over a water bath either in aluminium or enamelled vessels. Heated to 100°C it is poured into special pans of different sizes lined with oilcloth. Cooled to the required temperature (50-60°C), the sheets of ozocerite are removed from the pans and are placed on the patient's abdomen, following which the patient is warmly covered. These applications are made for 30-60 minutes. After each procedure the patient rests for 30-40 minutes. A course of treatment consists of 20-30 applications. During the procedure ozocerite thickens and is easily removed from the moist skin. The removed ozocerite is immersed in water and the latter is heated to 100-120°C for 30 minutes, after which the ozocerite may be used again.

Only fresh, unused ozocerite is employed for vaginal tampons; it is heated apart from that which is employed for the usual applications.

Paraffin and ozocerite are indicated in cases of subacute and chronic inflammatory diseases of the female genitalia.

PHOTOTHERAPY

Complex photochemical and biological processes occur in the organism under the influence of light. Phototherapy is administered in the form of a light bath in which the light of a number of electric bulbs is concentrated on a certain part of the body (Fig. 213). Such baths are usu-

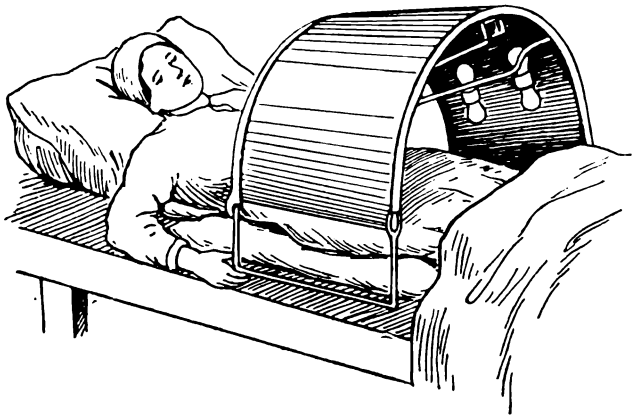


Fig. 213. Light bath

ally applied to the lower half of the abdomen and the upper part of the thighs; the baths are covered with blankets and the bulbs are switched on; the active agents of such baths are heat and light. The temperature of the baths is boosted to 40-60°C, but it is best to begin at a low temperature and raise it gradually, which is achieved by switching on more bulbs. A light bath usually lasts 20-30 minutes, after which the patient's abdomen is sponged with water at room temperature and dried. After a light bath the patient must stay in bed for at least half an hour.

Phototherapy may also be administered by means of one powerful sun lamp (of 1,000 and more candle power).

Gynecological practice also makes use of *mercury-quartz lamps* which emit a large amount of ultraviolet rays and thereby generally tend to strengthen the patient's organ-

ism. There are stationary mercury quartz lamps (Fig. 214) for general irradiation of patients and portable ones (Fig. 215) for local ultraviolet irradiation effected at patients' bedsides in hospitals.

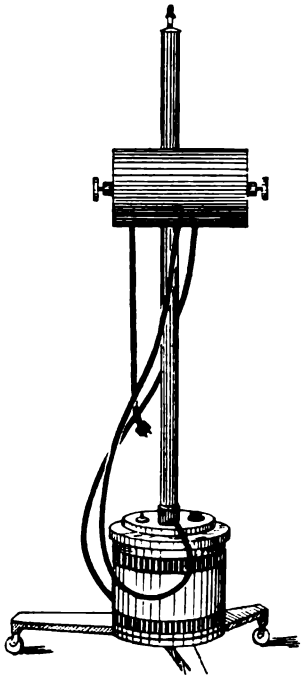


Fig. 214. Stationary mercury-quartz lamp

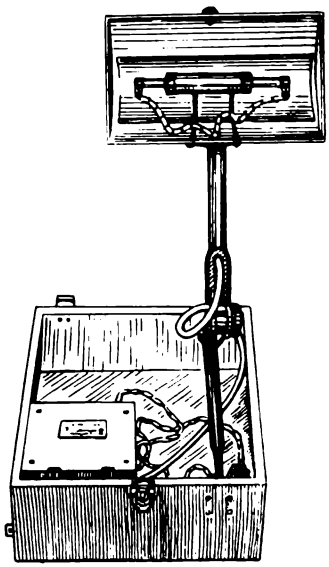


Fig. 215. Portable mercury-quartz lamp

ELECTROTHERAPY

The electric currents used in electrotherapy are distinguished according to tension (currents of low and high tension), direction (direct and alternating currents) and frequency (currents of low, high and ultrahigh frequencies).

Ionogalvanisation (*Iontophoresis*) is a method of introducing ions of medicinal substances into the tissues and

organs by means of direct electric current. During the passage of direct electric current through solutions of potassium iodide, calcium chloride and other medicinal substances, positively and negatively charged ions of the particular medicinal substance are formed. Penetrating into the tissues these ions are retained there for a longer time and thereby produce a greater therapeutic effect.

Fig. 216. Abdominosacral arrangement of electrodes

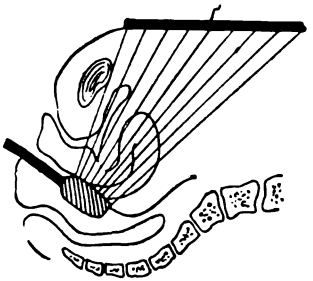


Fig. 217. Abdominovaginal arrangement of electrodes

Iodine iontophoresis and ichthyol iontophoresis are used in gynecological practice to treat adhesive inflammatory processes. Calcium iontophoresis is used in inflammatory processes attended with uterine bleeding.

Diathermy is a method of passing high frequency alternating electric current through the body with heat of 40°C and higher forming in the given part of the body. This produces marked hyperemia in deep tissues, which in its turn intensifies the vital activity of the cells in the heated regions and favours more rapid resorption of infiltrates, softening of cicatrices and diminution of pain. Diathermy is extensively used in the treatment of chronic infiltrative inflammatory processes in the female genitalia.

There are special diathermic apparatus which produce high frequency current; to a large focus the current is fed through two metal plate or cylindrical electrodes. The plate electrodes of thin tin foil are usually applied to the surface of the skin (Fig. 216), while cylindrical electrodes

are designed for introduction into cavities (vagina [Fig. 217], rectum). The basic rule to be observed during diathermy is that the electrodes must infallibly be applied close to the body; if this rule is neglected and a space is left between the electrode and the surface of the body, sparks will form and the patient will complain of a pricking sensation in these parts when the current is turned on; if the apparatus is not switched off in good time, the patient may sustain a burn.

One electrode is applied to the abdomen and the other one to the sacrum; both electrodes are firmly pressed to the body by means of pillows filled with sand or a special belt and are connected with the wires of the apparatus. The nurse turns on the high frequency current, boosts it to 1 A and stays at the apparatus and the patient's bedside, watching the readings of the ammeter, the work of the apparatus and the patient's condition. To avoid application of the current for longer than necessary the nurse uses a special clock, which begins to ring at the end of a definite period, or a sand-glass. Out-patients must stay in bed after a session of diathermy, as well as after all other physiotherapeutic procedures, for at least 30 minutes before being allowed to go home.

Diathermy is also used for treating long unhealing erosions of the cervix uteri if they are not of cancerous etiology. In these cases *diathermocoagulation* of the eroded surface of the cervix uteri and the mucosa of the cervical canal is administered.

Diathermocoagulation is resorted to after various conservative methods of treatment have failed to produce a favourable effect. This method produces superficial coagulation of the modified mucosa of the cervix uteri and the cervical canal. At the site of former erosion a sort of scab is formed and gradual epithelisation begins. This process usually lasts 3-4 weeks, during which time increased vaginal discharges, and gradual dissolution and separation of the necrotic tissue are observed.

During the first day after diathermocoagulation bleeding is possible, for which reason the patient has to be watched. Out-patients must be visited at home by the nurse who must report their condition to the physician.

Suspicion of cancerous erosion and the existence of an acute or subacute inflammation of the adnexa contraindicate diathermocoagulation.

Electric field of ultrahigh frequency (UHF). High frequency current is not fed directly to the patient's body; the patient or separate parts of her body are placed between insulated plates of the condenser connected with the UHF generator; the tissues of the organism are permeated by an electric field and absorb a certain amount of energy.

In gynecology UHF is used in cases of inflammatory processes in the internal genitalia. The anti-inflammatory activity of UHF is manifested in its influence on the nervous and vascular systems and in enhancement of the general reactivity of the organism.

RADIOTHERAPY

This form of therapy includes the use of roentgen and radium rays. Roentgen rays are formed in a special vacuum glass tube during the passage of current of very high tension (150,000-200,000 V) through it. Like radium rays, roentgen rays have the property of acting on the living cell. The different cells of the living organism possess different degrees of sensitivity to roentgen and radium rays. For example, cancer cells and the cells of the follicle in the ovary are highly sensitive to these rays, whereas all the other cells are less sensitive. Roentgen and radio therapy is based on this unequal sensitivity of the cells.

Radium rays act almost directly on the part where the source of radium radiation is located, whereas roentgen rays act over a greater distance from the source of origin of the rays. For this reason, for example, in cases of cancer of the cervix uteri, i.e., an area accessible to direct introduction of radium, it is best to use radium, whereas, if the focus to be acted upon is located in the interior and is directly inaccessible or is very large, roentgen rays are used because they penetrate from the surface of the skin into the tumour through the entire thickness of the tissues.

Radium is used in metal tubes applied to the places which have to be acted upon. Women confined to bed with

radium inserted must be very carefully watched and given proper medical care.

Roentgen rays act on deep tissues through definite parts of the skin (Fig. 218); the rest of the body is covered with

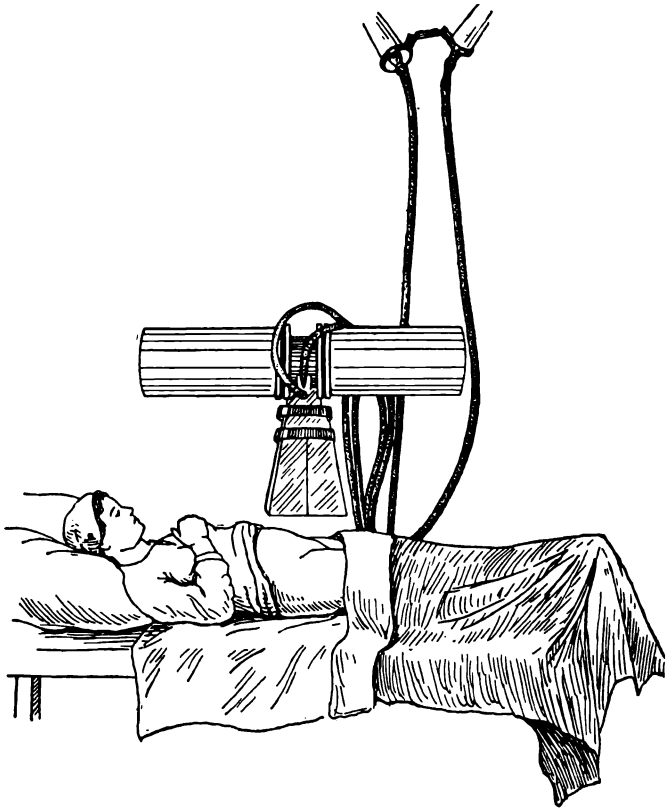


Fig. 218. Roentgenotherapy. All of the patient's body except the part to be irradiated is covered with lead-impregnated rubber

a special lead-impregnated rubber which does not pass roentgen rays. The readings of the measuring instruments and the patient's condition are observed through a special "lead" glass from the control room. The patient must be warned that the irradiated parts of the skin may not be

exposed to chemical and thermal stimulation, i.e., they may not be washed with very hot water, may not be painted with iodine, and no hot-water bottles or mustard plasters may be applied to them because they may sustain burns and subsequently become ulcerated.

MEDICINAL METHODS OF TREATMENT

In gynecological practice medicinal substances are administered per os, intramuscularly, intravenously and in the form of various tampons, enemas and irrigations.

Tampons. Tampons serve to introduce and retain medicinal substances in the vagina. Usually cotton tampons are employed; these are pieces of cotton the size of a tangerine tied crosswise with a thread and having a long tail. The tampons prepared in that manner are sterilised. One hour after douching a tampon impregnated with cod-liver oil, glycerine, streptocide emulsion or some other substance is introduced into the posterior vaginal fornix exposed by means of speculums. The tampon is left in the vagina and the speculums are removed. The tampon remains in the vagina for 8-10 hours after which the woman removes it herself by the tail end of the thread hanging down from the vagina.

The therapeutic effect of such tampons is produced by the action of the medicinal substance introduced with them.

Enemas and rectal infusions. Hot enemas (microclysters) (45°C) are administered (after cleansing enemas) in cases of inflammatory diseases with infiltrations in the *rectouterine fossa*. A small amount of liquid (50-100 ml) is usually administered from a boiled rubber balloon of the aforesaid capacity with the patient in a knee-elbow position.

Ordinary water, physiologic saline solution or a camomile tincture may be used for the aforesaid enemas.

A so-called **rectal drip** administered from an ordinary Esmarch's can is also used. A small glass tube sometimes equipped with a special cock is placed along the rubber tube; with the aid of this cock or two ordinary clamps which compress the rubber tube from different sides, leaving a very small fissure, the dripping of the liquid is regulated. In-

stead of a glass nozzle an elastic catheter is used; the catheter is regulated to administer a certain number of drops per minute (40-50) and is introduced into the rectum. As in all other cases of therapeutic enemas, a rectal drip must be preceded by a cleansing enema.

Water, physiologic saline solution and a glucose solution at body temperature (sometimes higher—up to 40°C) are usually employed for a rectal drip. A rectal drip lasts 2-3 hours, for which reason it is very desirable to surround Esmarch's can with hot-water bottles to keep it warm. A special padded cover to keep the can warm is very convenient (Fig. 219).

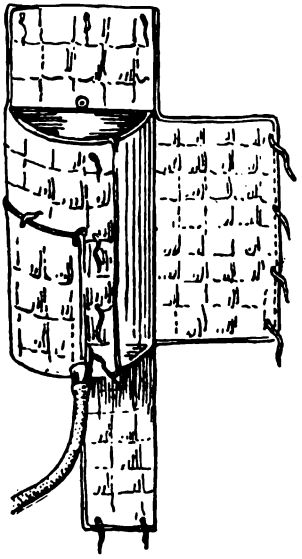


Fig. 219.
Esmarch's can in a warm cover. The right and left halves of the cover are fastened to each other with laces, after which the upper and lower parts are laced to them. Hot-water bottles have to be applied to the cover

A **cleansing enema** is made of boiled water at 26-28°C. Four or five glassfuls of this water are poured into Esmarch's can which has a rubber tube 1 m long and a sterile glass nozzle. A small amount of water is released through the nozzle (this removes the air) and the nozzle is introduced into the rectum to a depth of 10 cm. During administration of the enema the patient must lie on her left side at the edge of the bed or couch with legs slightly flexed in the knees. The can is suspended from a tripod or is held by the nurse at a height of no more than 1 m above the bed level.

If a strong stream of water gives the patient unpleasant sensations or pain (which may sometimes occur in cases of inflammation in the minor pelvis or tumours), the can must be held lower, in which case the water will flow more slowly and will cause no pain sensations. After all of the water has been introduced the nozzle is removed. The patient must retain the water for several minutes.

The nozzle is carefully washed, sterilised by boiling, and kept in a jar containing a 1 : 1,000 mercury bichloride solution.

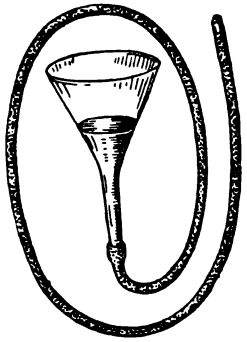


Fig. 220.
Funnel and rubber tube for siphon enema

A **soapsuds enema** is administered when it is necessary to produce intense intestinal peristalsis (in cases of atonia, constipation). One or two tablespoonfuls of liquid soap are thoroughly dissolved in boiled water and the resultant soapsuds solution is poured into an Esmarch's can with four or five glassfuls of boiled water. The enema is administered like a usual cleansing enema.

The nurse may prepare liquid soap from laundry (nontoilet) soap for which purpose a bar of soap weighing 100 g is placed in a pot containing 1 litre of water and boiled until the soap dissolves. This soap is sterile and may be used for soapsuds enemas (1-2 tablespoonfuls per 1 litre of water).

A **hypertonic saline solution enema** produces a profuse liquid and not infrequently recurrent stool. A solution of 30 g of common salt or magnesium sulfate per 100 g of warm water is used for such enemas. The solution is administered by means of a rubber balloon.

An **oil enema** (without water) is administered in cases of spastic constipation and constricted intestinal lumen. This enema is made of 100 ml of linseed, sunflower seed or vaseline oil administered by means of a syringe (Janet-type) through a catheter. The oil penetrates between the intestinal wall and the fecal masses and mechanically facilitates their discharge. After administration of the oil the patient must lie quiet.

A **siphon enema** is administered for the greatest possible evacuation of the products of fermentation and putrefaction, toxins and mucus from the colon, and for stimulation of peristalsis in cases of postoperative intestinal atonia (distention).

For a siphon enema it is necessary to prepare 8-10 litres of boiled water at 32°C and a 500-ml sterilised glass funnel to which a gastric tube, one of its ends coated with vaseline, is connected (Fig. 220). The water is poured from a

pitcher into the funnel, the air is released from the tube, the latter is introduced into the rectum to a depth of 40 cm and the funnel is raised. As soon as the water level reaches the narrow part of the funnel the latter is quickly lowered almost to the floor where a bucket is prepared. The liquid with mucus, feces and a large number of gas bubbles come flowing out of the funnel. Another 500 ml of water is poured into the funnel and the latter is raised again. As soon as the water level reaches the narrow part of the funnel again the latter is quickly lowered. This is repeated until almost clean water begins to flow out of the funnel.

The temperature of the water must not drop below that prescribed by the physician as long as the siphon enema is administered, for which purpose hot water is added to the prepared water whenever necessary.

Medicated enemas are intended for absorption of the medicinal substances by the mucous membrane of the rectum.

An **opium enema** is prepared by pouring 50 ml of warm water into a measuring or ordinary glass and adding 15-20 drops of opium tincture; the water is aspirated into a balloon, the nozzle of the latter is coated with vaseline and the liquid is administered into the rectum; the patient is warned not to release the liquid.

A **camomile enema** is prepared as follows: a teaspoonful of *Matricaria chamomilla* is boiled in 200 ml of water, the decoction is strained through a layer of gauze, cooled to 38-40°C and administered from a balloon into the rectum. This enema is designed for thermal action favouring resorption.

To administer a **garlic enema** (vermifuge), a large head of garlic is grated or ground, mixed with warm water, strained through a layer of gauze and then introduced into the rectum from a rubber balloon.

A **blood enema** is administered in cases of extensive childbirth hemorrhages. The blood lost by the parturient woman during the placental stage is used. The blood is usually collected into a clean sterilised vessel, strained through a sterile cloth or several layers of gauze and is then diluted with the same amount of a warm 10 per cent glucose solution or physiologic saline solution. The mixture is poured into an Esmarch's can and the latter is sur-

rounded with hot-water bottles. The enema is administered by the rectal drip method.

A **nutrient enema** is designed to introduce into the organism nutrient substances which can not be introduced by the usual method (in cases of salivation, pernicious vomiting). This enema is usually administered by the rectal drip method.

The nutrient substances include broth, egg yolks, glucose and vitamins. The usual, most frequently administered nutrient enema consists of 200 ml of broth, two beaten egg yolks and two tablespoonfuls of a bromide solution. The liquid must be well mixed and lukewarm.

Disinfectants, for example, potassium permanganate, mercury bichloride, lysol, boric acid, etc., and *astringents* are essentially used for douching.

Disinfectants

R. Kali hypermanganici (Potassium permanganate) 2% 200.0
d. 1 tablespoonful per bottle (5 glassfuls)

R. Lysoli (Lysol) 100.0
d. 1-2 teaspoonfuls per bottle

R. Acidi lactici (Lactic acid) 200.0
d. 1-2 teaspoonfuls per bottle

Astringents

R. Acidi tannici (Tannic acid) 150.0
d. 1-2 teaspoonfuls per bottle

R. Aluminis (Alum) 100.0
d. 1-2 teaspoonfuls per bottle

R. Aceti pirolignosi (Pyroligneous acid) 200.0
d. 1 tablespoonful per bottle

R. Zinci sulfurici (Zinc sulfate) Aluminis (Alum) āā 100.0
d. 1 teaspoonful per bottle

For the treatment of trichomoniasis *osarsol* (*acetarsone*, *acetarsol*) in powder form is mainly used; the powder is sprayed on the vaginal walls. No more than 0.3 g of osarsol is sprayed into all foci where Trichomonas may be present (urethra, cervix uteri, anus). Osarsol is also used as an emulsion.

The foregoing procedures are administered by a nurse under a physician's control; the nurse must be particularly attentive and very persistent.

In cases of bleeding, *ergot* and its preparations are used. It should be remembered that ergot and its preparations are administered during hemorrhages only if the uterine cavity has not retained remnants of the embryo or placenta.

Ergot is given per os in powder form, mixture and drops; it is also administered subcutaneously.

R. Pulv. Secalis cornuti (Ergot powder) 0.5
D.t.d. N. 12
d. 1 powder t.i.d.

R. Extr. Secalis cornuti fluidi (Ergot extract) 30.0
d. 25 drops b.i.d.

R. Sol. Secalis cornuti ex (Ergot extract solution) 6.0 200.0
d. 1 tablespoonful every 3 hours

A liquid extract of water pepper (smartweed) and pituitrin are used as *hemostatics* in gynecological uterine hemorrhages.

R. Extr. Polygoni hydropiperis fluidi (liquid extract of water pepper) 30.0
d. 30-40 drops t.i.d.

R. Pituitrini (Pituitrin) 1.0 in amp.
D.t.d. N. 6
d. 1 ml subcutaneously

Analgine, belladonna in suppositories, and promedole are used in gynecology as *analgesics.*

R. Analgini (Analgine) 0.5
D.t.d. N. 10 in tabul.
d. 1 tablet b.i.d. or t.i.d.

R. Extr. Belladonnae (Belladonna extract) 0.02
Butyri Cacao (Cocoa butter) 1.5
M.f. suppos. (Suppositories)
D.t.d. N. 6
d. 1 suppository b.i.d.

R. Sol. Promedoli (Promedole) 2% 1.0
D.t.d. in amp. N. 6
d. 1 ml b.i.d. subcutaneously

The following *spasmolytic* is used:

R. Papaverini hydrochlorici (Papaverine hydrochloride) 0.03

Extr. Belladonnae (Belladonna extract) 0.015
Butyri Cacao (Cocoa butter) 1.5
M.f suppos. (Suppositories)
D.t.d. N. 6
d. 1. suppository into the rectum

For treatment with *tampons* a 10 per cent solution of ichthyol in glycerine is used.

R. Ichthyoli (Ichthyol) 10.0
Glycerini (Glycerine) 90.0
MDS. For tampons

Ichthyol is also administered without tampons—in the form of little balls:

R. Ichthyoli (Ichthyol) 0.3
Butyri Cacao (Cocoa butter) q.s.
M. ut fiat globuli vaginalis
D.t.d. N. 10
d. 1 little ball for the night

The little balls are convenient to use because they soil the linens less than do tampons, and are more easily introduced by the patients themselves. When tampons are used the vagina must be douched after removal of the tampons, and when little balls are used the vagina must be douched the following day.

A synthomycin emulsion is also used:

R. Emuls. Syntomycini 10% 50.0
D.S. for tampons

The measures listed in this chapter do not, of course, exhaust all the therapeutic methods and agents used in conservative gynecology; they are merely the ones most frequently employed in hospitals and polyclinics.

The nurse must be able to perform most of the aforedescribed manipulations and to teach some of them to the patients. However, the nurse performs all the manipulations and procedures *only by prescription of a physician* and under his observation.

Supplement 1

OBTAINING MATERIAL FOR LABORATORY EXAMINATIONS

Taking Blood for Wasserman's Test

The blood is taken from the ulnar vein with a thick sterile needle. From bedridden patients the blood is taken while the patients are in bed. The edge of the bed is covered with an oilcloth (so that the linens may not be soiled with blood), a sterile diaper placed on top of the oilcloth. The patient is moved to the edge of the bed to bring the elbow joint to the very edge. The region of the elbow joint is washed with warm water, dried and then disinfected with alcohol. A tight rubber tourniquet is applied to the upper arm, 8-10 cm above the elbow, without obliterating the pulse of the ulnar artery. If the ulnar vein is not clearly observed on the extended arm after application of the tourniquet, the patient is asked to clench and unclench her fist several times, following which the ulnar vein appears in greater relief. A dry needle is taken from the steriliser with cleanly-washed hands, the mandrin is removed from the needle and the latter is introduced, bevelled end up, into the vein. As soon as blood starts flowing through the needle, the tourniquet is removed, a sterile test tube is placed under the needle, 10 ml of blood is drawn into the test tube, and the latter is plugged with cotton. The needle is withdrawn from the vein and the site of the puncture is tightly compressed with a piece of sterile cotton and bandaged. A label with the name of the institution, the number of the case history, the patient's name, number of the ward, diagnosis of the disease and date on which the blood was taken is attached to the test tube which is thus sent to the laboratory.

The syringe and needle must be immediately rinsed because the blood coagulates rapidly and may spoil the needle.

Taking Smears from the Genitalia

Smears are taken—the patient in a gynecological chair—with a special platinum loop, which is easily and quickly sterilised over a flame, or, if there is no loop, with a small sterile tampon on a long

stick, or a special curet (Fig. 221) or, lastly, with a long forceps. The number of instruments must correspond to the number of sites from which the material for examination is taken (a separate instrument for each site).

The patient must be warned in the evening not to wash her genitalia or urinate in the morning before the smears are taken because the urine may wash the pathogenic microbes out of the urethra.

A smear from the urethra is taken first; to do this, the vulvar opening is spread with the fingers of the left hand and the urethral orifice is exposed. A platinum loop sterilised over a flame and cooled is introduced into the urethral orifice from which mucus and discharges are taken and placed on clean slides.

Fig. 221. A curet

Sometimes the urethra should be lightly massaged from below and the discharge expressed from it, in which case the discharge is taken directly with the loop without introducing the latter into the urethra. Following this a sterile Cusco's speculum is introduced into the vagina, or, if there is an assistant, two Sims's speculums are introduced, the cervix uteri is exposed and with the loop sterilised over the flame again or with a fresh tampon the discharge from the cervix is taken and spread in a thin layer on a slide. Then the discharge from the posterior fornix of the vagina, which usually accumulates on the lower speculum, is taken and placed on the third slide.

The smears are fixed by being moved once or twice over the flame of a spirit-burner and are then sent with a covering note to the laboratory for examination. Each slide must be marked accordingly: U—for urethra, C—for cervix, and V—for vagina.

Taking Smears for Cytological Examination

Investigation of the cellular picture of the smears taken from the vaginal contents helps to elucidate the hormonal functioning of the ovaries. For this purpose a smear is taken from the depth of the vaginal fornices with a long glass pipet and is spread on a slide, after which the smear is dried and sent to the laboratory for special staining and microscopic examination.

Taking the Vaginal Discharge to be Examined for Trichomonas Vaginalis

Examination for the Trichomonas vaginalis is usually performed in a suspended drop. For this purpose a drop of the vaginal discharge is placed on a slide, 2-3 drops of physiologic saline solution are added

and immediately examined under the microscope. If an immediate examination cannot be made, the drop of discharge is placed in a sterile test tube with a small amount of physiologic saline solution, the test tube is plugged, a requisite label is pasted to it and the test tube is sent to the laboratory.

Taking Material for Examination from the Newborn

Discharges from the eyes. The slide is first rubbed down with alcohol and dried. The pus or other discharges from the palpebral conjunctiva are spread with a sterile tampon in a thin layer on a slide. Following this the smear is fixed by being moved once or twice over the flame of a spirit-burner. The discharges from each eye are taken with separate sterile tampons and are placed on separate slides with marks R (right) and L (left). A note is appended to the smears with the child's name, the department, number of the bed, the site from which the smears were taken and the date.

Examination of the mucus from the pharynx and nose. The mucus is taken with a sterile tampon on a wire (as from adults) and is sent in a sterile test tube to the laboratory.

Taking the discharge from the umbilical wound for a culture. The discharge is taken with a sterile loop, a special test tube with broth is opened, the open end of the test tube is passed over the flame, the loop is immersed in the broth and then accurately removed, the open end of the test tube and the plug are passed over the flame again and the test tube is plugged. A requisite note is appended to the test tube and the latter is sent to the laboratory for examination.

Measuring the Daily Amount of Secreted Saliva and the Vomitus

For this purpose a graduated glass cup with a lid is used; the patient collects her saliva or vomitus in this cup (separately). As soon as the cup is full, the amount of collected saliva or vomitus is recorded in the patient's case history, the cup is emptied, rinsed and given to the patient again. The total amount of saliva and vomitus is calculated at the end of the day.